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OF

HYDROGRAPHY.

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MEMOIRS

OF

HYDROGRAPHY

INCLUDING

Brief Biographies of the Principal Officers who have Served in

H.M. NAVAL SURVEYING SERVICE

BETWEEN THE YEARS 1750 and 1885

COMPILED BY

COMMANDER L. S. DAWSON, R.N.

IN TWO PARTS.

PART I.—1750 TO 1830.

EASTBOURNE:
HENRY W. KEAY, THE "IMPERIAL LIBRARY."

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PREFACE.

IN gathering together, and publishing, brief memoirs of the numerous maritime surveyors of all countries, but chiefly of Great Britain, whose labours, extending over upwards of a century, have contributed the means or constructing the charted portion of the world, the author claims no originality. The task has been one of research, compilation, and abridgment, of a pleasant nature, undertaken during leisure evenings, after official hours spent in duties and undertakings of a kindred description.

Numerous authorities have been consulted, and in some important instances, freely borrowed from; amongst which, may be mentioned, former numbers of the Nautical Magazine, the Journals of the Royal Geographical Society, published accounts of voyages, personal memoirs, hydrographic works, the Naval Chronicle, Marshall, and O'Byrnes Naval Biographies, &c.

The object aimed at has been, to produce in a condensed form, a work, useful for hydrographic reference, and sufficiently matter of fact, for any amongst the naval surveyors of the past, who may care to take it up, for reference—and at the same time,—to handle dry dates and figures, in such a way, as to render such matter, sufficiently light and entertaining, for the present and rising generation of naval officers, who, possessing a taste for similar labours to those enumerated, may elect a hydrographic career.

Accounts of discoveries made in the course of Arctic Exploration, have barely been alluded to, the majority of these, having been chronicled, in a far abler manner, by an eminent geographical authority.

The chronological order adopted, refers to the period at which the several officers commanded surveys, or contributed most towards hydrography.

The Appendix deals briefly with a few subjects connected with hydrography; and the Index, at the end of the book, will perhaps be found useful for purposes of reference.

With the exception of Captain Thomas Hurd, portraits of the various occupants of the post of hydrographer to the Admiralty are given; in his case, no likeness appears to have survived, and it has been with no small difficulty, that any record of his naval services could be lighted upon.

C.W.O.L.
C.S.J.

Preface.

To the ambitious, it may be well to remark, that of the Royal Naval officers services herein enumerated, but few have risen to active flag rank, and only one, or two, ever hoisted their flags.

In formulating the works, memoirs, or biographies, of the dead and living alike, the endeavour has been made to deal with all in an agreeable, and unprejudiced tone, so that no single individual shall find his susceptibilities in the slightest degree ruffled, either on his own behalf, or on the part of any, towards whom, he may cherish feelings of admiration, esteem, or affection.

By those whose nearness or easiness of access, enable them to form an accurate judgment, many will be found, neither so detestable, not so admirable, as perhaps they may be thought by opposite parties. The truth is well expressed in the fable of "The Clouds."

Two children once, at eventide, thus prattled by their parents' side :—
See, mother, see that stormy cloud! what can its inky bosom shroud?
It looks so black, I do declare, I shudder quite to see it there.
And father, father, now behold these others, all of pink and gold!
How beautiful and bright their hue! I wish that I were up there too:
For, if they look so fine from here, what must they be when one is near!
Children, the smiling sire replied, I've climbed a mountain's lofty side,
Where, lifted 'mid the clouds awhile, distance no longer could beguile:
And closer seen, I needs must say that all the clouds are merely grey;
Differing in shade from one another, but each in colour like his brother.
Those clouds you see of gold and pink, to others look as black as ink;
And that same cloud so black to you, to some may wear a golden hue.
E'en so my children, they whom fate, has planted in a low estate,
Viewing their rulers from afar, admire what prodigies they are.
O! what a tyrant! dreadful doom! his crimes have wrapped our land in gloom;
A tyrant! nay, a hero this, the glorious source of all our bliss!
But they who haunt the magic sphere, beholding then its inmates near,
Know that the few, by some adored, by others flouted and abhorred,
Nor sink so low, nor rise so high, as seems it to the vulgar eye.
The man his party deems a hero, his foes, a Judas, or a Nero—
Patriot of superhuman worth, or vilest wretch that cumbers earth,
Derives his bright or murky hues, from distant and from party views;
Seen close, nor black, nor gold are they, but every one a sober *grey*.

Having quoted the above, the author will not trouble his readers with a longer preface, except to crave their leniency as critics, and forbearance for any errors that may be detected; but it may be necessary to add that owing to the pressure of surveying duties in India, some delay may be caused in the production of the latter part of the book, so that it has been found advisable to divide the work into two parts, the first of which is now offered to the public.

L. S. D.

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Page	2,—sixth	line	from	bottom,	omit "English."
„	2,—fourteenth . .	„	„	„	for "Edmund," read "Edward."
„	3,—twelfth . . .	„	„	top,	for "Germany," read "Holland."
„	9,—eleventh . . .	„	„	„	omit "of Sir Humphry Davy."
„	11,—sixth	„	„	„	for "Tunor," read "Timor."
„	11,—fifth	„	„	bottom,	for "*Ariaduc*," read "*Ariadne*."
„	15,—seventh . . .	„	„	top,	for "*Descebierta*," read "*Descubierta*."
„	23,—first	„	„	bottom,	introduce "Sydney" at end of the last line.
„	23,—sixth	„	„	„	for "leading," read "leaving."
„	42,—twenty-third .	„	„	top,	for "Cadiack," read "Kodiak."
„	61,—nineteenth . .	„	„	„	for "ascertian," read "ascertain."
„	64,—thirty-second .	„	„	„	for "seen," read "seem."
„	72,—fourth . . .	„	„	bottom,	for "1827," read "1817."
„	73,—eleventh . . .	„	„	„	for "supernumuary," read "supernumerary."

MEMOIRS

OF

HYDROGRAPHY.

CHAPTER 1.

Ancient Geography and Hydrography. Mackenzie, Lane, Byron, Wallis, Carteret, Bougainville, Gauld, Captain Cook, Lieut. Mackenzie, Phipps, Varela, Des Barres and Holland, Tofino, La Perouse, Bligh, Phillip, Spence, Malaspina, McCluer, Columbine, Edwards, Vancouver, D'Entrecasteaux and Kermadec, Bampton and Alt, Churruca and Fidalgo, Herrera and Cevallos, Ugarte, Flinders, Broughton.

The first records we have of geographical knowledge are in the Pentateuch, and in the book of Joshua. In the East, on the shores of Asia Minor, we must look for the cradle of geography. Homer describes the shield of Achilles as representing the earth surrounded by the Sea, and also the countries of Greece, islands of the Archipelago, and site of Troy. According to his writings, Corsica was the limit of the civilised world?—the coasts of Hesperia, Galias, Iberia, and Mauritiana, were beyond the seas. The Mamertine strait, was considered very dangerous in those days; the rock of Scylla, the whirlpool of Charybdis, and the floating islets of Eolus, were bugbears which the Greek navigators of the period always avoided. Anaximander of Miletus, was the inventor of geographical maps, about 568 B.C. That the Phœnicians well knew the art of navigation is proved by the voyage of Hannon, a celebrated Carthaginian general, who, with a powerful armada, sailed for Mauritiana and Western Africa, even beyond the gulf of Guinea, forming factories along the coasts, and visiting the Canary islands.

The Corinthians who were the inventors of the Triremes (ships of three tiers of oars) colonized Sicily, overrun Sardinia, Corsica, and France, landed forces at Marseilles, and continued on to the columns of Hercules; they passed these, and came in contact with the Phœnicians, from whom, without doubt, they obtained the charts and directories, which they used in their voyages.

Scillax, the Athenian traveller, penetrated beyond the strait of Gibraltar, and published his discoveries in his celebrated periplus. Alexander the Great, took with him geographers and astronomers, with a view to mapping the countries which he conquered. Hipparchus came from the school Alexander founded at Alexandria, to him is attributed, the invention of the plane chart, about 135 B.C. afterwards improved by the Moors and Arabs, and introduced into Europe about A.D. 1201.

Strabo the historian, left the most complete work on geography of his day, in which the shores of the Mediterranean are delineated, he, also, gives an account of the Canaries (Fortunate islands).

When the fall of the Roman Empire came about, a suspension of intellectual pursuits ensued, followed by an invasion by the enemies of learning, into all such matters, until the expeditions to the Holy Land of the Crusaders, became the commencement of a new era of advancement, including geography with other sciences. The Mahometan sects now came forward, creating universities at Cordova, Grenada, Bagdad, Bassora, and Damascus, to initiate the mysteries of their service; of these Mahometans, an Arab named Edrisi, a scholar of Cordova, about the middle of the twelvth century, wrote the work entitled "Geographical Recreations," containing a description of the western part of the Mediterranean.

The voyage of Rabbi Benjamin de Tudela, in 1160, to the South of Europe, contributed to the geographical knowledge of the period: a description with maps, being published by the Latins of the middle ages. The Genœse and Venetians in the twelvth and thirteenth centuries, were masters of the commerce of the Levant, and corrected the charts of the Alexandrian geographers. The Catalonian school greatly improved Mediterranean hydrography, judging from the documents it has transmitted to posterity. As soon as the Saracens of Majorca possessed sufficient power, they established in that island, a nautical school, where the celebrated Ramon Lull published in 1286, his "Phœnix of the Wonders of the World," and attracted to him, those skilled in pilotage and cosmography, who have handed down to us, their art in constructing charts. In the time of Lull, and before Flavius Gioja made known in Europe the compass needle, the Catalonians and people of Majorca, used it, in a crude form, in the Mediterranean; but from the time the compass card was invented, a great change came about in the art of navigation, Spanish and Portuguese launching boldly out, making lengthy expeditions, and contributing to the improvement of hydrography in general.

The atlas of charts of the Majorca nation, by James Farrer, August 1346, preserved in Paris, is one of the most ancient and complete that are known. With the information obtained in the schools of Majorca and Barcelona, navigators extended their voyages, doubling the Cape, as well as discovering land to the westward. Nautical geography was improved; the astrolabe which succeeded the balestible, gave place to the octant, and the variation of the Magnetic needle was studied, which so much assisted Columbus in his first expedition to the new world.

The invention of the Mariners compass is the important connecting link between ancient and modern Geography. The modern maps and *charts* were introduced into England by Bartholomew Columbus, to illustrate his brother's theory respecting a western continent, A.D. 1489.

The plane charts, which served fairly well for representing the Mediterranean, were not adapted for use, however, when much range of latitude was required; the Spanish chart makers now substituted another method, and by maintaining the parallelism of the meridians, represented properly, the due proportions of the land.

This invention, termed the Spherical chart, did not satisfy every demand, and was improved on by Gerard Mercator, and perfected by Edmund Wright, and is now known as Mercator's projection

In the Sixteenth century, manuscript charts were gradually giving place to engraved charts, and triangulation combined with astronomical observations, began to step in.

Geography being the Science of describing the earth and its several countries, as a matter of course, dates infinitely farther back than Hydrography, which may be said to be the art of describing, measuring, and illustrating the waters taken in conjunction with the surface of the earth.

The first English Sea-chart is attributed to Henry the Navigator in the Sixteenth Century. Numerous voyagers following his example, recorded the results of their voyages, illustrating the same by maps, formed on no particular recognised basis, and varying in reliability and accuracy, in as great a degree, as, perhaps did the scientific knowledge and characters of those, whom, if they did not construct, may be said to have been at any rate in a considerable measure responsible for the publicity given to these productions

The earliest work written upon modern hydrography, or nautical Surveying, is we believe, that of Murdoch Mackenzie, published in 18.9, with a supplement by James Horsburgh, the East Indian Hydrographer.

In 1778, an atlas of the South coast of the Spanish Peninsula, was published by Tofino. Alcano Galiano, in 1802, followed suit, rectifying such important positions, as the Morea, Archipelago, Marmara, Bosphorous, Karamania, and African coasts.

France, in 1737, had published reduced charts of the Mediterranean; later on, Billan, D'Anville, Verguin, Bernard, and others followed, with Beautemps Beaupre, Kerhallet, Hill, and Berard.

England reproduced tne French and Spanish works, under the management of Captain Knight, Moor, Reiner, Dalrymple and Hurd; also, the private chart making firms of Van Keulen in Germany, Lawrie, Purdy, and Arrowsmith of the United Kingdom. Very few, if any, charts, of a trustworthy nature, had been constructed or published in England before the first of Cook's celebrated voyages, made in 1768-71, and as it is proposed to deal as closely as possible, with Hydrographic voyages and undertakings recognised for accuracy and utility, a brief account of what took place under governmental auspices, subsequent to 1750, and prior to the impetus given to such works by Cook, in his first voyage, will suffice.

PROFESSOR MURDOCH MACKENZIE,

1750-71.

Mr. Murdoch Mackenzie was employed by the Admiralty, as far back as 1750, to survey the Orkney and afterwards the Shetland islands; he subsequently surveyed (with compass) a great part of the north coasts of Ireland, and west coasts of Scotland. These surveys, or examinations, were not, as may be readily understood, remarkable for accuracy; albeit, the official authorities of those days, caring more for quantity than quality, were not prepared to continue the expenses attached to nautical surveying, unless the latter particular was duly attended to. Under Mr. Mackenzie's direction, in about 1760, a chart of the Atlantic Ocean was engraved in London (being the first upon a large scale made in this country), on the circular projection, which was his own invention; it was afterwards found inaccurate in detail, and was superseded, in 1777, by one constructed by M. de la Rochette which was more highly thought of. The following appear to have been the main results of professor Murdoch Mackenzie's hydrographic labours.

A hydrographic survey of the Orkney and Lewis islands, *folio* 1750.
Nautical Descriptions of the west coast of Great Britain from Bristol Channel to C. Wrath, *folio*, 1776.
Maritime survey of Ireland and the west coast of Great Britain, 2 *Vols*, *folio*, 1776.
Nautical Description of the Coast of Ireland, *folio*, 1776.
Charts of the Irish coast, *folio*, 1776.

LIEUTENANT MICHAEL LANE, R.N.

1763-68 (about).

This officer was employed by order of Commodore Sir Hugh Palliser, the first governor, in surveying the coasts of Newfoundland and Labrador, about the same time at which Cook was similarly engaged in the former neighbourhood. His surveys were perhaps less accurate than those of Cook, owing probably, to the method used and instruments employed, being of a more primitive nature. As to the period of Lieutenant Lane's entrance into the Navy, or of his various services, and dates of appointment, no record exists. Some few of his hydrographic labours, by their title, appear to have been undertaken conjointly with Cook; others, single handed. It seems probable, that Lane did not rise beyond a Lieutenant's rank in the naval profession. The latest document that has come to hand, bearing his name, is dated 1768. The following were amongst the charts resulting from his surveys.

Placentia bay. Chart from point Lance to cape Spear. The coast of Labrador from cape Charles to Sandwich bay. Fogo harbour and island. Cape Spear to Bona Vista. Bacalieu island to Bona Vista. Shicataen to Chateaux. St. Michaels to Spotted island (Labrador).

COMMODORE BYRON, R.N.

1764-66.

The above officer, in command of H.M. Ships *Dolphin* and *Tamar*, left England, January 1764, and passing into the Pacific through Magellan strait, discovered Disappointment, George, Prince of Wales, Danger, Duke of York, and Byron islands, returning May 1766. Lieutenant Mackenzie, afterwards employed as nautical Surveyor on the home coasts, served as a Midshipman throughout this voyage.

See,—Narrative of Commodore the Hon. John Byron in a voyage round the world, with an account of the gigantic people seen called Patagonians, together with a description of seven islands discovered in the South Sea. 12 *mo. Dublin* 1767.

Also, account of distress suffered by himself and companions, and loss of *Wager*. 8*vo*. 1768.

CAPTAIN WALLIS, R.N.

1766-68.

In August of the year 1766, Captains Wallis and Carteret, in the *Dolphin* and *Swallow*, sailed from England for the Pacific. Having passed through Magellan strait in company, they there separated. Wallis discovered Whitsunday, Queen Charlotte, Egmont, Duke of Gloucester, Duke of Cumberland, Maiatea, Tahiti, Eimeo, Howe, Scilly, Boscawen, Keppel, and Wallis islands, and returned to England in May 1768. The result of this voyage was published as,

Captain Wallis's voyage to the coast of Patagonia, Otaheite &c; with tables of latitudes and longitudes west of London; 1766-68. *Hawkesworths Voyages*. Vol. I. 1766-69.

CAPTAIN CARTERET, R.N.

1766-69.

Carteret after parting company with Wallis, discovered Osnaburg, Pitcairn, Swallow, Admiralty, Carteret, and Gower islands, and the strait separating New Britain and New Ireland, returning to England March 1769. The title of his narrative ran thus,

Voyage from Plymouth, Madeira, and strait of Magellan, to Masafuera, Queen Charlotte islands &c., with a table of the variation of the compass. *Hawkesworths Voyages*. Vol. I. 1766-69.

CAPTAIN L. A. DE BOUGAINVILLE, (French Navy.)

1766-69.

In November 1766, the frigate *La Bourdeuse* and store ship *L'Etoile*, under the command of Captain Bougainville, sailed by way of Magellan strait for the Pacific, discovering several islands in the north part of the Low archipelago, Lanciers, Harp, Thrum, Cap, and Bow islands. He considered that he was the first to find Tahiti; from thence, sailing for the Navigator islands, and taking a route between the New Hebrides and Louisiade, he arrived again in France, March 1769.

See—History of a voyage to the Falkland islands, in 1763-64, and of two voyages to the strait of Magellan, with an account of the Patagonians 4 *to*. 1771.

GEORGE GAULD ESQ.

1767 (about).

Mr. Gauld surveyed the west coast of Florida and Louisiana, from which surveys, copies of the chart published, cost as much as sixteen shillings; also, for a chart of Tortugas and Florida Cays, the public price was twelve shillings; that of the island of Grand Cayman, however, by the same surveyor, was only valued at one shilling. These three charts appear to have embraced the greater part of Mr. Gauld's labours. The following account of the coasts surveyed was afterwards published.

Observations on the Florida Cays, Reef, and Gulf; also, a description with sailing instructions for the coast of West Florida 8*vo*. 1796.

Mr. Gauld also surveyed the west end of Cuba and St. John's harbour.

CAPTAIN JAMES COOK, R.N.

1768-79.

Born in Yorkshire, in a lowly sphere of life, October 27th, 1728, James Cook, as is well known, first went to sea in a collier brig, afterwards joining the Navy on board H.M.S. *Eagle*, where he speedily worked his way to the quarter deck, and rank of master, under the patronage of Captain Sir Hugh Palliser, who very soon recognised the merits of this remarkable man. When employed in this capacity, on the North American Station, Cook, commenced his career as a nautical Surveyor, and from the first, showed marvellous aptitude, for this important, although at that time, little understood, science. The south and west coasts of Newfoundland, strait of Belleisle, and parts of the gulf of St. Lawrence, representing in turn, the vicinity of his labours, which may be said to have commenced as far back as 1763. In 1768, Cook returned to England, and in consequence of a memorial presented to the King by the Royal Society, setting forth the advantages which would accrue to science if an accurate observation of the then approaching transit of Venus over the sun's disc were observed in the South Seas, Cook was selected for the duty. Mr. Alexander Dalrymple, the East Indian Hydrographer, afterwards appointed the first hydrographer to the Admiralty, had been offered the opportunity of carrying out the service mentioned, but, as a difficulty stood in the way of granting him the naval rank, which he considered a necessary adjunct, to the successful carrying out of what was expected of him on such an expedition, it was ultimately determined to employ Cook in his stead. A collier barque of 370 tons, was purchased for this service, having been fully prepared for a foreign voyage; to this vessel, the name of *Endeavour* was given, and she was duly commissioned by Cook, who had been made a Lieutenant on appointment, and sailed from Plymouth August 26th, 1768. In company with Cook was Mr. (afterwards Sir) Joseph Banks, (a gentleman of fortune), and Dr. Solander, as naturalists, with other assistants. The *Endeavour* touched at Madeira Rio de Janeiro, Straits le Maire, Tierra del Fuego, Lagoon islands, Bow island, Chain island, Society islands, Otaheite, which latter was arrived at April 1769. After successfully observing the transit of Venus (by means of which the distance from the sun to the earth was afterwards calculated at 108,000,000 of miles), the return voyage was made to New Zealand, which was circumnavigated, and the transit of Mercury observed; thence to the

westward, when the memorable discovery of the East coast of Australia was made, Port Jackson (Sydney) being discovered and named May 6th, 1769, (not after the look-out man of the *Endeavour* as has been erroneously supposed, but in honour of the Secretary of the Admiralty of that period). Passing along the coast of New South Wales, discovering and naming in turn, Broken bay, Port Stephens, Moreton bay, Harvey bay, &c., Cook passed through Torres strait, and thence to New Guinea, Batavia, the Cape of Good Hope, St. Helena, arriving at Deal, June 10th, 1771.

Dr. Hawkesworth edited the account of this voyage, and by adding his own remarks, is said to have brought down, some severe, but unmerited criticisms, on the whole narrative.

A summary of this first voyage of Cook round the world, has been thus given. "Dis-" covered the Society islands and determined the insularity of New Zealand; discovered" "the strait which separates the North from the South island (called Cook's strait), and" "surveyed both. Explored the East coast of Australia hitherto unknown, throughout an" "extent of about 2,600 miles of latitude."

The minute accuracy of detail found in Cooks charts, claim for him the title of the grandfather of modern hydrography; to Sir Francis Beaufort perhaps, more appropriately belongs the title, of father of the same.

Immediately on the close of Cooks first voyage, the second was undertaken under the auspices of King George III, who determined on sending him in search of the supposed southern continent, considered at that time to exist in the southern hemisphere. With this object in view, Commander James Cook was appointed to the command of the *Resolution*, and Lieutenant Tobias Furneaux, who had served under Captain Wallis during his voyage round the world, was appointed in a like capacity to the *Adventure*. Special attention was paid to the victualling of these ships, anti-scorbutics, &c., being liberally provided. The naturalists were Mr. J. R. Forster and his son. The astronomers were Mr. W. Wales and Mr. W. Bayley, and Mr. Hodges accepted the position of artist. Sir Joseph Banks had intended to accompany Cook, but some misunderstanding as to accomodation, stood in the way, and had the effect of causing him to remain behind.

The *Resolution* and *Adventure* sailed from Deptford April 9th, 1772, and Plymouth, July 13th, calling at Madeira, Cape Verde, Cape of Good Hope, searched for a southern continent, in the course of which, reached latitude 67° 15′ S., longitude 40° E., January 1773: continued to New Zealand, Resolution island, Doubtful island, Tongataboo, Oytstack, South Sea, Easter island, Marquesas islands, Society islands, Friendly islands, New Hebrides, New Caledonia, Norfolk island; thence after stoppages of no particular note, returned to England July 1775. The *Adventure* under Furneaux, twice parted company during the voyage; the second time, between the Friendly islands and Queen Charlotte sound of New Zealand, not to meet again before reaching England. Owing to this, Furneaux preceded Cook in making the voyage across the Pacific ocean in a high latitude. Cook reached 71° 15′ S.

By the excellent precautions taken by Cook, the ship's crew escaped scurvy or other diseases, so common to nautical undertakings, extending over so long a period. His system, the basis of that even now in use in well conducted ships, gained for him, from the Royal Society, the Copley gold medal. During this voyage, Cook carried and tested what has received the credit for being the first chronometer, made by Kendall upon Harrison's description, and the result of his favourable report, procured for Harrison, the £10,000 prize granted by parliament. (See appendix).

The chief discoveries of the second voyage, were the New Hebrides, New Caledonia, which is one of the largest and finest islands of the South Pacific, and Norfolk island.

This voyage obtained for Cook great personal honour, and he was promoted to the rank of Captain and appointed a Captain of Greenwich Hospital on account of it.

The third voyage of Captain Cook, was undertaken in the *Resolution*, and *Discovery* Commander Clerke, who had served as Cook's lieutenant during the second voyage in the former ship. Among Cook's officers were Lieutenants Gore and King, and his master

was William Bligh (subsequently of the *Bounty*). With Clerke in the *Discovery*, was Lieutenant (afterwards Admiral) James Burney, author of Burney's voyages, and justly termed the historian of the Pacific.

This expedition sailed from Plymouth, July 12th, 1776; its object was the exploration of the North Pacific, and to examine the connexion or separation of the American and Asiatic continents. The ships touched at Teneriffe, Cape Verde, Cape of Good Hope, and anchored in Adventure bay, Tasmania; thence they sailed to Queen Charlotte sound, in New Zealand: then to the Tonga group, discovering Mangeea and Atiu on the passage, and making a more minute examination of the Friendly islands. Thence they proceeded towards Tahiti, discovering Toobouai. They landed Omai, a chief brought to England by Cook in his former voyage, at Tahiti, and proceeding to the northward, made the grand discovery of the Sandwich islands. Cook examined these, and has recited many most interesting details of them. From the Sandwich islands he proceeded to the north-west coast of America, anchoring in Nootka sound. Thence he proceeded to the north-west, examining the coasts, and entered Prince William's sound and Cook's river (or inlet), reaching Ounalashka. Afterwards he continued through Behring's strait to the icy barrier, establishing the real character of the countries and the erroneous condition of the maps. After again touching at Ounalashka, he made for Karakakooa bay, in Hawaii. Here the well-known tragedy took place. Cook, the Lono or god of the Hawaiians, was killed. This sad event occurred February 14th, 1779. Lieutenant King then took the second command under Captain Clerke. The ships proceeded to Awatska bay, and again fruitlessly attempted the north-west passage. Before the return to Kamschatka, Captain Clerke died, and Gore and King became the commanders. They proceeded along the Japanese coast past Sulphur island, discovered the Pratas, to Macao, and thence to England by the Cape of Good Hope, reaching the Nore, October 4th, 1780; the two ships having been absent upwards of four years, and having only twice lost sight of each other during the voyage. Thus concluded the three most celebrated voyages of that period from which a new era in hydrography dates.

The description given in these pages, may be taken as the barest scaffolding of Captain Cook's services as a scientific navigator. His widow died at Clapham, as recently as May 1835, aged 94 years. At Captain Cook's death, a special pension of £185 a year, was granted her, by the Treasury. By her will (sworn under £60,000), the Copley medal, and that struck in her husband's honour by George III, were bequeathed to the British Museum.

Far in advance of anything hydrographic that had ever gone before, the skill and painstaking shown by Cook, may be said to have formed an example for the numerous surveying expeditions which subsequently set forth from the shores of all nations, but England in particular, and the necessity for which, has unfortunately now become almost extinct.

Full accounts of Cook's voyages, and the Atlases of charts representing his numerous discoveries and surveys, were published under the patronage of the government of the period; but of the earlier charts, made between 1763 and 1768, by order of Commodore Sir Hugh Palliser, at that time governor of Labrador and Newfoundland, less is known.

They consisted chiefly as follow:

The coast between cape Anguille and Great Jervis harbour, and strait of Belleisle.
South coast of Newfoundland, between Point Lance and cape Spear.
Bad bay, York harbour.
Quirpoint and Noddy harbours.
Griguet to point Ferrol.
Bay of Islands.
Open bay to Green island.
Green island to point Ferrol.

Dr. Douglas, bishop of Salisbury, superintended the publication of Cook's third voyage, which is considered, the most interesting of the various books, dealing with the circumnavigators three great undertakings.

In 1877, the government of New South Wales erected a handsome bronze statue of Cook; upon a pedestal of marble, the great discoverer stands in a conspicuous position upon the rising ground on the south side of Port Jackson, looking out upon the harbour, an unmistakable landmark to the sailors of to-day.

In Great St. Andrew's Church, Cambridge, is a marble monument, left to perpetuate Cook's memory. The inscriptions are as follows:—

IN MEMORY.

Of Captain James Cook, of the Royal Navy,
one of the most celebrated Navigators that this
or former ages can boast of; who was killed by
the Natives of Owhyhee, in the Pacific ocean, on the
14th, day of February, 1779; in the 51st year of his age.
Of Mr. Nathaniel Cook, who was lost with the
Thunderer Man-of-War, Captain Boyle Walsingham,
in a most dreadful hurricane, in October, 1780;
aged 16 years.
Of Mr. Hugh Cook, of Christ's College, Cambridge,
who died on the 21st of December, 1793, aged 17 years.
Of James Cook, Esq., Commander in the Royal Navy,
who lost his life on the 25th, of January, 1794, in
going from Pool to the Spitfire Sloop-of-war, which
he commanded; in the 31st year of his age.
Of Elizabeth Cook, who died April 9th, 1771, aged 4 years.
Joseph Cook, who died September 13th, 1768, aged 1 month.
George Cook, who died October 1st, 1772, aged 4 months.

All children of the first-mentioned Captain James Cook, by Elizabeth Cook, who survived her husband 56 years, and departed this life 13th May, 1835, at her residence, Clapham, Surrey, in the 91th year of her age. Her remains are deposited with those of her sons, James and Hugh in the middle aisle of this Church. On a scroll, under a shield, bearing a globe, on which are lines tracing the shores of the Pacific ocean, is written "Nil intentatum Reliquit."

LIEUTENANT MURDOCH MACKENZIE, R.N.

1771-88.

The above officer, the nephew of Professor Murdoch Mackenzie, was born about the year 1749, and served as a midshipman in the *Dolphin*, under Commodore Byron, in that officer's celebrated voyage round the world, 1764-66. In 1771, he was appointed as head maritime Surveyor in the Service of the Admiralty, in succession to his relative the Professor, and in 1773 was employed in the neighbourhood of the Lands End; in 1775, on the north coast of Kent; in 1771, on the surveys of Plymouth, Falmouth, and Torbay; having just completed Plymouth sound when the combined fleets of France and Spain, appeared before it, in the summer of 1779. In this year, Mackenzie was made a lieutenant, and Lord Shouldham sent him on special services to Jersey, Torbay, and other places. In 1780, with Mr. Graeme Spence as his assistant, he surveyed the Channel between the Isle of Sheppey and the main; suspicions being entertained, that the Dutch, with whom we were at war, might get into the Medway, through this back channel, and consequently out of reach of the guns at Sheerness. In 1781, at the request of the Trinity house, with Spence, he surveyed the Needles, with a view to fix upon a mode of lighting, and thence to the Owers. His eye-sight now began to fail, but he still continued to act as the head nautical surveyor for the government, until the spring of 1788, when the Admiralty suddenly ceased to employ either him or his assistant. The greater number of charts constructed from his surveys, do not appear to have been published before 1804, when Mr. Spence was employed at the Admiralty in their preparation, together with Nautical Descriptions. The following were amongst Lieutenant Mackenzie's works.

Owers, Chichester, Emsworth harbours.
St. Helens Road, Spithead, Portsmouth, and Langstone harbours.
Part of Isle of Wight, including the Mother bank.
Southampton river, the Brambles, Cowes road.
Needles channel.
Isle of Wight, St. Helen's road to Needles point.
Blackwood point to St. Albans head,
Rame head to Exeter.
Torbay.
Plymouth to the Lizard.
St. Agnes head to Hartland point.
Entrances of River Thames.
St. Albans head to Abbotsbury.
Abbotsbury to Sidmouth.
Falmouth.

A treatise on Marine Surveying; with a supplement by Captain James Horsburgh. 8vo. 1819.

CAPTAIN C. J. PHIPPS, R.N.,
(AFTERWARDS LORD MULGRAVE).

1773.

The North Polar expedition under the above officer, though not altogether of an hydrographic nature, was remarkable for the numerous inventions and appliances made use of, apparently for the first time. It was made by order of the Earl of Sandwich, in consequence of an application from the Royal Society, the object being to ascertain how far navigation was practicable towards the North Pole.

The *Racehorse* and *Carcass* were fixed upon as strong and proper vessels for the voy ge, the latter being commanded by Captain Lutwidge.

The first trustworthy deep sea soundings were made in this voyage, the weight employed being 156 lbs., and depth found 780 fathoms.

A water bottle* for recovering specimens of the water from the bottom, the invention of Dr. Irving was used, those of Sir Humphry Davy supplied for this purpose, failing to act satisfactorily.

Deep Sea thermometers by Lord Charles Cavendish, employed for ascertaining the temperature at different depths, appear to have acted well. An Apparatus for distilling fresh water from that of the sea, also, the invention of Dr. Irving, proved a great success. A chronometer by Kendal on Harrison's principle, and one by Arnold, with a pocket chronometer by the latter maker, gave accurate time, especially the latter.

Nairnes dipping needle, and two pendulums, the swinging of which latter, was designed to give a more accurate notion of the figure of the earth, proved each in their respective sphere, of the greatest value.

Sailing in June, 1773, an almost due north course was made by the ships for the west part of Spitzbergen; the hightest latitude attained was eighty degrees, fifty minutes. The north coast of Spitzbergen and North East land were partially examined, and a plan of Fair Haven made, with several sketches of islands, headlands, &c. The vessels returned in safety to England in September of the same year.

See—A voyage towards the North Pole, undertaken by Captain Constantine J. Phipps, in 1773. *4to. London*, 1774.

CAPTAIN VARELA, (Spanish).

1777-78.

The above officer, the colleague of Tofino, accompanied De Borda in the frigates *Bruxula* and *Espiegle* making surveys among the Canaries and on the West coast of Africa in the gulf of Guinea. This work is quoted as the most accurate extant until the survey of Lieutenants Arlett and Kellett R.N., in the *Etna* and *Raven* in 1835. De Borda also made one of the expedition in 1771-72, with De Verdun de la Crenne, and Pingrè, which was ordered by the French government to report upon the various instruments and methods for ascertaining maritime positions in different parts of Europe, Africa, and America. Early charts and views of this part of the west coast of Africa have also been attributed to Captain Price, R.N.

COLONEL J. F. W. DES BARRES and MAJOR S. HOLLAND.

1777-81 (about).

The above were Engineer officers, who, with a few naval volunteer assistants, made surveys of parts of Nova Scotia, Prince Edwards island, River St. Lawrence, and New Brunswick, with portions of the now United States of America. From these officers, Captain Thomas Hurd, R.N., who was made Hydrographer in 1808, received his earlier

*The bottle had a coating of wood, 3 inches thick, which was wrapped up in an oiled skin, and let into a leather purse; the whole enclosed in a well-pitched canvass bag, firmly tied to the mouth of the bottle, so that no water could penetrate to its surface. A piece of lead shaped like a cone, with its base downwards, and a cord fixed to its small end was put into the bottle; and a piece of valve leather, with half a dozen slips of thin bladder were strung on the cord, which, when pulled, effectually corked the bottle from the inside.

lessons in nautical surveying. Among the charts made by them, were the following. Some few date as far back as 1764.

Charts of the coast and harbours of the Gulf and river St. Lawrence, *folio* 1778.
Charts of the Coast from New York to Florida, *folio* 1730.
Atlantic Neptune 2 *vols. folio* 1777 and 1781.
Charts of the coast and harbours of New England 1764.
Magdalen islands, St. John island.
Chaudiere to Lake St. Francis.
St. Lawrence river.
St. John river to Little river.
St. Lawrence gulf and Newfoundland.
Nautical Remarks and observations on the coast and harbours of Nova Scotia, *4to.* 1778.

CAPTAIN DON VINCENTE TOFINO.

1784-88.

In 1784-85, Captain Tofino, the great Spanish hydrographer was employed surveying the coast of Spain in the Mediterranean, and the islands of Majorca, Minorca and Iviza; in 1786, Portugal and Gallicia; and in 1788, the Azores. He became Director of the Spanish Naval Academies, &c. in 1787. From his surveys, the British Admiralty published and reproduced the following charts:

Strait of Gibraltar.
Gibraltar to Cape de Gatto.
Cape de Gatto to St. Antonius Carthagena.
Cape Nao to Barcelona.
Ports St. Sebastian and Passage.
Ports Santano and Santander.
Bay of Gijon, entrance of Barquero.
Ports Cedeira, Ribadeo and Vivero.
Inlets of Corunna, Ferrol and Betanzos.
Mouth and harbour of Ferrol.
Inlet of Corcubion; Port Camarinas.
Muros and Arosa bays with Vigo and Pontevedra inlets.
Vigo.
Entrance of the Tagus river.
Cadiz.
Fayal road—Azores islands.
Angra road in Terceira island.
Spanish coasting pilot, with Balearic islands and coast of Portugal, with 28 charts and plans, *4to. Madrid* 1787.

LA PEROUSE, (French).

1785-86.

This voyage was undertaken for the extension of French commerce, at the time when Cook's voyages had given so great an impetus to trade in the Pacific; and one of the first objects of *L'Astrolabe*, under La Pérouse, and *La Boussole*, under Capt. De Langle, was to examine the N.W. coast of America, where the profitable furs were reported to be procurable. This was followed from mount St. Elias (June 1786) to Monterey, from whence they proceeded to Canton; after that to Kamschatka, sailing into the sea of Saghalin. Their next destination was the Navigator and Friendly islands; and, lastly, Sydney, in New South Wales. After the ships quitted this port, nothing more was heard of them, notwithstanding that due search and inquiry were made; until in 1826, some articles were found at Tucopia, which were traced to Vanikoro, where, in 1827, Captain Dillon found undoubted evidence of the wreck of two ships. and the departure of the crews in a vessel built from the wrecks, but never heard of.

The detailed [illegible] voyage were, left Brest August 1st, 1785, Madeira, Teneriffe, Salvages, Martin Vas, Trinidad, searched for Ascensao island, St. Catherine island. Searched for I. Grande; R. Galiego, Patagonia, Straits le Maire, Cape Horn. Searched for Drakes I.; Mocha. Conception of Easter islands, La Mesa, Sandwich I., Mount St. Elias, Port des Francais and coast to Monterey; Necker I., Marianas, Bashee Is., Macao, Manilla, Japan, Corea, Avatska bay, Navigator I., Friendly I., Tongatabboo, Norfolk I., Pylstaart, Port Jackson. Wreck of the ships discovered in 1827, at Manicolo (or Vanikoro) by Captain Dillon.

See—Voyage of La Pérouse round the world in the years 1785-88 translated from the French. 2 *vols.* 8 *vo.* 1798. Also, Labillardière's voyage in search of La Pérouse from the French. 2 *vols.* 8*vo.* 1800.

CAPTAIN WILLIAM BLIGH, R.N.
1787-93.

Seventeen years after the return of Cook from his first voyage, the *Bounty* of 215 tons was fitted out under the command of Lieutenant Bligh, who had acted in the capacity of master under Cook, for the purpose of transplanting the "bread fruit tree" from Polynesia to the West Indies.

In 1780, after the mutiny of the *Bounty* near Tofoa, Bligh in the launch steered for Coepang, in Tunor, and sailing northward, passed round cape York and the Prince of Wales islands. Under the circumstances of distress and difficulty Bligh could not do much for navigation and geography; yet, he took views and made such observations and notes as enabled him to construct a chart of his track, and of the coasts reefs seen from the launch And as Bligh passed north of Prince of Wales islands his interesting narrative and accompanying chart, made an useful addition to what little was at that time known of Torres strait.

The *Pandora* was sent out in search of the mutineers in 1790, but wrecked in Torres strait, 29th August 1791, on the return voyage, with fourteen of those of the mutineers, who had returned to, and remained at, Otaheite, on board.

The loss of the *Pandora* was not known in 1792: when Commander William Bligh visited Torres straits for the second time with H.M.S. *Providence* and the brig *Assistant*, commanded by Lieutenant Portlock. The object of his mission as before was to transport the bread-fruit plant from Tahiti to the West Indies, and to explore a new passage through Torres Strait: in both of which he was successsful.

From Blighs entrance on the East, to Blighs Farewell pass on the West, the northern passage through Torres strait, teeming throughout with dangers, was successfully accomplished in a period of nineteen days.

After his return to England from this voyage, Bligh commanded in turn, the *Director*, the *Glatton*, and the *Warrior*, and was afterwards for two years the governor of New South Wales.

At the mutiny of the *Bounty* the whole of his surveys and sketches made during that voyage, were left behind, and it is to be feared lost. He appears to have been also engaged in the survey of a few ports on the coasts of the United Kingdom, &c.,

Among others: St. Lucea harbour (Jamaica), Track Chart of *Resolution* and *Discovery* in N.W. Pacific, Dublin bay, 1800, Dungeness, 1800.

Captain Bligh commanded ships of the line at the battles of Copenhagen and Camperdown, and eventually rose to flag rank. His ideas of discipline however seem to have been slightly overstrained, bringing upon his own head much of the unpleasantness which appears to have haunted almost his whole career.

Voyage to the South Sea in 1787-89, for the purpose of conveying the bread-fruit tree to the West Indies in H.M.S. "Bounty"—including an account of the mutiny on board, and the subsequent voyage of part of the crew in the ships boat from Tofoa to Timor. *4to.* 1792.

Dangerous voyage with part of the crew of H.M.S. Bounty in an open boat over twelve hundred leagues of the Ocean. *12mo.* Dublin 1824.

CAPTAIN ARTHUR PHILLIP, R.N.

Born October 11th, 1738, and educated at Greenwich, Arthur Phillip entered the navy at the age of 16, partaking in his younger days in the early misfortunes and subsequent glories of the seven years war. In 1761, he was made a lieutenant, and in 1763, upon the restoration of peace remained for sometime upon half pay. The war between Portugal and Spain however, caused him to offer his services, which were duly accepted, to the former power. In 1779, returning to England, he became master and commander of the *Basilisk* fire ship. November 1781, finds him promoted to a post captain into the *Ariadne*, and in 1785, he sailed with a re-inforcement to the East Indies, where he remained until peace was restored.

It having been determined to form a penal settlement at Botany bay of New South Wales, Captain Phillip was appointed the first governor, and set sail from the Mother bank,

May 13th. 1787, as Commodore of H. M. S. *Sirius*, Captain John Hunter, having under his orders the *Supply*, Lieutenant H. L. Ball, three store ships, and six transports, eleven sail in all. A prosperous passage was made to Santa Cruz where the fleet anchored June 3rd, remained a week, and thence to Rio de Janeiro and the Cape of Good Hope. Leaving the Cape November 12th, and having with Lieutenant P.G. King, his first lieutenant, transhipped to the *Supply*, when about 80 leagues eastward of the Cape, Captain Phillip arrived at Botany bay January 18th, 1788. After examination, Port Jackson was found a more favourable neighbourhood for the formation of a settlement, and here accordingly Governor Phillip established the foundation of what is now the thriving capital of New South Wales. January 25th, the ill-fated expedition under La Pérouse in the *Boussole* and *Astrolabe* arrived, which sailed from France in June 1785, and had last touched at Norfolk island. February 7th, 1788 was the day upon which a regular form of government in New South Wales was formed. On the 14th, of February, Lieutenant King left for Norfolk island in the *Supply*, there also to form a settlement. Broken bay, about 8 miles north of port Jackson, and reported upon by Cook, was explored by Governor Phillip in the month of March; on the 10th, of that month, La Pérouse sailed from port Jackson, having lost his naturalist, Father Le Receveur, who was buried at that port, a tablet being erected to his memory by the Colonists, he having paid a similar tribute to Captain Clerke, who sailed with Cook in his third voyage, at the harbour of St. Peter and Paul in Kamtschatka. The ships of La Pérouse were afterwards lost, and no soul escaped to tell the tale. The *Supply* under Lieutenant Ball returned on the 29th of February from Norfolk island, with promising accounts from Lieutenant King of the new settlement. During his voyage Lord Howe's island and Ball's pyramid had been discovered. Considerable hardship was suffered about this time by the colonists at Sydney, owing to the scarcity of provisions and outbreak of scurvy, as well as the bad behaviour of some of the convicts, With these difficulties Governor Phillip successfully contended in turn, but such is not matter to be dwelt upon here.

In 1788, Captain Hunter of the *Sirius* surveyed port Jackson with its numerous arms and inlets, and produced an excellent chart on a scale of about $1\frac{1}{3}$ inches to the mile, with hydrographical remarks and sailing directions. In 1792, Captain Phillip gave up, and was succeeded in 1795, in his governorship by Captain Hunter, who had accompanied him in the *Sirius*.

CAPTAIN P. G. KING.

Philip Gidley King born in 1758, entered the Navy at the age of twelve, in the *Swallow*, and served as midshipman for five years on the East Indian Station. With Captain Bellew in the *Liverpool* he sailed for Virginia in 1775, and was wrecked in that frigate in Delaware bay in the same year. He then joined the *Princess Royal*, and was made a lieutenant by Admiral Byron into the *Renown*. He subsequently served in the English channel in the *Kite* and *Ariadne* until 1783. Sailing for the East Indies under Captain Phillip in January of the last mentioned year, at the conclusion of peace, he returned to England in May 1784. Having thus come under the notice of Captain Phillip, he was appointed lieutenant of the *Sirius* for the New South Wales expedition in October 1786, and as has been related, was selected to conduct the first settlers to Norfolk island. He succeeded Captain Hunter in the governorship of New South Wales in 1800, and continued to hold that post until 1806, when he in turn was succeeded by Captain William Bligh, R.N. formerly of the *Bounty*.

LIEUTENANT JOHN SHORTLAND.

Entered the Navy on board the *Anson* at the age of sixteen, and afterwards joined the *Culloden*, *Hampton Court*, and *Vanguard*. In 1763, he was made a Lieutenant by Admiral Swanton. Until 1782, Lieutenant Shortland was chiefly employed in going to and from America, and in that year he commanded the transports with the 97th regiment on board which relieved Gibraltar. Homeward bound from this service he was chased by the Spaniards, who took three of the transports under his orders, but was fortunate enough to escape in the *Betsy*, and arrived in England without loss or damage. In 1786, he was

appointed agent to the transports sent to New South Wales, where he arrived in January 1788. After six months stay at the new settlement at Port Jackson, he was ordered to England by way of Batavia by Governor Phillip, carrying dispatches for government, and arrived in England, May 1789.

In July, 1788, the transports *Alexander*, *Friendship*, *Prince of Wales*, and *Borrowdale*, sailed from Port Jackson under Lieutenant Shortland by way as it was intended of Endeavour Strait, but as it turned out by the Pelew islands, China Sea and Sunda straits. Bad weather overtaking the vessels after leaving Sydney, they became separated, the *Friendship* only remaining in company with the *Alexander*, in which latter was Lieutenant Shortland. The Middleton reef and island, New Georgia, and Shortland of the Solomon islands, the Treasury, Four, and Wallis islands were discovered. Pellew islands were communicated with, and the north east Coast of Borneo reached October 17th. Here the crews of the vessels having been terribly reduced by scurvy, the *Friendship* was sunk, and the remnant of her ships company transferred to the *Alexander*. Continuing to Batavia, the *Alexander* arrived November 19th, in an almost helpless state only one man besides the officers being able to work aloft. A new crew was here embarked, and at the Cape of Good Hope, the *Sirius*, Captain Hunter, fallen in with, who gave Lieutenant Shortland imformation that the missing transports *Borrowdale* and *Prince of Wales* had returned to England by the southern passage. The *Alexander* arrived at the Isle of Wight May 28th, 1789.

LIEUTENANT WATT, R.N.

This officer sailed in the transport *Lady Penrhyn* Captain Sever from Port Jackson for Macao roads, China, May 5th, 1788. During the voyage, undertaken under great difficulties, owing to the alarming inroads made by scurvy among the ships company, the vessels in order to recruit the health of the crew and lay in a stock of fresh provisions were forced to bear up for Tahiti. Macauley and Curtis islands were discovered *en route*, and Matavai bay Otaheite arrived at July 10th, 1788. Having refreshed his crew, the passage was continued for Tinian, Penrhyn island being discovered on the way. Having filled up with water no material incident occurred between this and Macao which roadstead was reached October 19th, 1788.

CAPTAIN MARSHALL.

In the transport *Scarborough* sailed from Port Jackson bound to China May 6th, 1788, being engaged to take in a cargo of tea by the East India Company. For a considerable part of the voyage he found himself in company with the *Charlotte*, Captain Gilbert, the latter discovered and named Matthew rock, Charlotte bank, and several of the Gilbert group which bears his name. Captain Marshall, in like manner, fell in with and named after himself, the Marshall islands. Both vessels touched at Tinian of the Ladrone islands, previously discovered by Lord Anson, to recruit the health of their men, who had suffered greatly from scurvy, and to procure water. A heavy S.W. gale which afterwards ripened into a hurricane, rendered it necessary for both vessels to cut their cables and proceed to sea. Macao roads were arrived at 7th September, 1788, without any further noteworthy occurrence taking place.

Voyage to Botany Bay, with an account of the establishment of the colonies of Port Jackson, and Norfolk island, and the Journals of Lieutenants Shortland, Watt, and Capt. Marshall, with accounts of their discoveries. *4to.* 1789.

GRÆME SPENCE.

1788-1804.

Born in 1758, at the age of fifteen years, or in April 1773, Græme Spence was bound apprentice for seven years, to Lieut. Murdoch Mackenzie, R.N., (his cousin) to learn Maritime Surveying. Mackenzie was at this period employed surveying about the Lands End; having succeeded his uncle Professor Murdoch Mackenzie, as head-surveyor in the Service of the Admiralty, two years before; it was held out to Mr. Spence, that eventually he should succeed, to the charge of the survey in like manner. He was entrusted with the duty of Surveyor's assistant, in the summer of 1775, in the course of which year, and the

next, he drew the chart, of the North Coast of Kent, from the North Foreland to Yantlet and Lee, in the river Thames.

The survey of the North Coast of Kent being finished, Mr. Spence assisted in the year 1777, in the survey of Plymouth, Falmouth, Torbay, and other parts of the channel to the westward, and no sooner had the survey of Plymouth Sound been completed, than on the appearance of the combined fleets of France off it, by order of Admiral Lord Shouldham, the buoys were sent in and removed, boats with flags flying being placed in their stead, whenever any of our own ships came in, or went out. This duty, although not connected with the survey, was carried on under the direction of Mr Spence. The surveys of Plymouth Sound and Torbay, proved most serviceable to the Engineers employed in erecting batteries for the defence of those places; and in consequence of the discoveries of new shoals made in Plymouth Sound, in the course of the survey, several buoys were laid down. Mr. Spence continued as assistant to Lieutenant Mackenzie to 1788, when the eye-sight of the latter, failing, the work almost entirely fell into Spence's hands. He had employed under him, a midshipman, and a mate; but one of these, finding the work too tedious for his tastes left, and the other, as it appears, did not evince much aptitude for it. At this time, Spence invented the "double sextant" and "station pointer." These were shown to Lord Howe, the first Lord of the Admiralty, who was pleased to order others upon the same pattern, of Troughton, the skilled mathematical instrument maker, but we are told, that Spence received no pecuniary reward: his pay at the time was £45 a year. In 1786, a plan of Portsmouth harbour on a scale of 8 inches to the mile, and system of moorings therein, engaged Spence's labour, and it redounds to his credit, that in 1841 Commander Sheringham, after making a similar survey of the same harbour, gives his high opinion, of the extraordinary accuracy of Spence's work.

In 1788, when the employment of Lieutenant Mackenzie and himself was for a time discontinued by the Admiralty, Spence was engaged by the Trinity House, in placing the Owers light vessel in position. In February 1789, he planned the situation and position of the Portland light near Portland Bill. He also assisted in experimenting for light houses with the new Argand burners, and plano-convex lenses, and reflectors.

In August 1789, at the age of 33, he again received orders to survey the Scilly islands for the Admiralty. This survey was finished in 1793, and has stood the test of time. In June 1790, while thus engaged, his piloting knowledge saved the *Pegasus* frigate from total shipwreck on the Isle of Annet. In 1793-94, he surveyed Garliestown bay, Ports Yorrock, Nessock, and Whitehorn harbours, and afterwards the Downs and Owers. He placed the Goodwin light in August 1795, (the month in which Dalrymple was made Hydrographer), and also reported upon the position for leading lights in the Gull stream, with additional buoys. Spence then reported upon, and made a plan of, the intended London or West Indian Docks. In 1796-97, he carried on the coast survey from the South Foreland to Beechy Head, including Dover and Rye harbours, which occupied until May 1797, a nautical military report following, as to its best means of defence: also, a report upon the best mode of improving Rye harbour. He next surveyed the coasts of Essex and Suffolk, from the Nore to Orfordness, which was finished by him in 1803. In August 1801, he piloted Lord Nelson in the *Medusa* frigate, drawing 18½ feet of water, over Harwich Naze, where no pilot would venture; the Medusa channel still bearing the name of that ship. In a letter expressing his high obligation to Mr. Spence for this service, Lord Nelson promised to befriend him for the future. In October 1803, Spence at his own desire, was permitted to retire after being requested to draw a chart of the East Swin. The Trinity House added £50 a year to his pension, in consideration of his discovery of certain new channels into the river Thames. From 1804 to 1808, Spence was employed at the Admiralty, in writing nautical directions for Lieutenant Mackenzie's work, which had been left incomplete, as well as for his own survey of the Swin. He continued until 1811, correcting the surveys of the Bristol Channel from the grand trigonometrical (ordnance) survey. This last work, closed his 38 years services, and he died in 1812 at the age of 54 years. Many of the instruments and apparatus

used by him were of his own invention, and after his death, a small book containing drawings of these, with a description of their methods of use, was submitted by his widow to Lord Melville, at that time first Lord of the Admiralty. Græme Spence was succeeded in the home survey by George Thomas Esq., Master R.N., about the year 1810. He never joined the Navy himself, carrying on his surveys in a vessel commanded by a naval officer, who was directed to comply with his wishes.

CAPTAIN DON ALESSANDRO MALASPINA, (Spanish).

1789-94.

This officer though in the service of Spain, was an Italian, and in the *Descèbierta*, with Bustamente in the *Atrevida*, left Cadiz August 1st, 1789. Trinidad, Monte Video Examined coast from Cape St. Antonio to Port desire, Falkland, Cape Virgins (the coast from Port Desire having been considered as surveyed by Magalhaens) Cape Horn, Aurora island, Talcapuauo, Valparaiso, Juan Fernandez, coast to the supposed strait of Juan de Fuca, Acapulco where they were joined by Espinosa and Cevallos from Vera Cruz, coast to northward of Marianas, Phillipines, Macao, New Holland, Friendly islands, returned to Cadiz, September 1794. His imprisonment on return at Coruna was the cause of most of his observations being lost.

His journals or charts have never been published. A sketch of this voyage is given in the introduction to the voyage of Galiano and Valdez. What is known of it is from the charts subsequently drawn up by *Don Filipe Bauza*, who formed one of the expedition.

LIEUTENANT JOHN McCLUER.

1790-94.

From 1787 to 1790, this officer was engaged in the East Indies, on a survey of the coast of India, under the orders of the Honourable East India Company: at first in the *Experiment*, and afterwards in the *Hawk* and *Experiment*, neither of which, however, were of more than 50 tons burden. He had as his assistant a Mr. John Procter, of whose ability he speaks in the highest terms. Having completed the coast between Bombay and Surat, he sounded over the space between the coast of Guzarat and India, made surveys of other parts of the India coast, and then proceeded to the Maldivh islands and Diego-Garcia. A box and two pocket (Arnold) chronometers were used, but these proving irregular in their rates, he returned them. The bearings and altitudes of the land were taken by means of a Hadley sextant. Of this survey, a full account is given by Dalrymple in Vol. 2 of the collection of his voyages and surveys. He speaks highly of Lieut. McCluer's energy and zeal, with such small means at his disposal, in fact, the Lieutenant appears to have paid special heed to paragraph 26 of his instructions,

"Let what is done, be done completely, and nothing left undetermined in this space: if any doubt arises, let them repeat their observations in such part, that an implicit confidence may be safely placed in their work when finished."

From 1700 to 1794, the same officer surveyed among the Phillipine islands, the Pellew islands, Eastern Seas, &c. A few of the charts resulting from his labours were,

The coast of Malabar, Coromandel and Ceylon.
The Senhate islands and reef (Laccadivhs) 1790.
Tracks of H.M.S. *Endeavour* and *Panther*, from the East-end of Java to New Guinea, 1791.
Pellow islands 1794.
Ea Loo archipelago 1794.
Coast of Arabia from the Curia Muria islands.
Port of San Pio Quinto (Phillipines).

CAPTAIN HENRY COLUMBINE R.N.

1790-1803.

For a few of the surveys made in the West Indies, hydrography was in its early days indebted to the above officer. In 1808, Captain Columbine formed one of the committee, appointed by the Board of Admiralty, to report upon the Hydrographic Department, which

report, resulted in Captain Thomas Hurd being selected to succeed Mr. Alexander Dalrymple as hydrographer. On the 11th, September 1809, Captain Columbine was tried by court martial at Portsmouth for the loss of the *Solebay*, but fully acquited of all blame. He died in June 1811, at sea, near the Azores, on his return on board H.M.S. *Crocodile* from the West coast of Africa, where he had been a great sufferer from fever and debility. The *Crocodile* was 63 days on the passage home, and lost 35 men from the same cau e

Amongst Captain Columbine's surveys were,
St. John's harbour, Antigua.
Island of Trinidad.
Island of Saba, West end of Cuba.
West Coast of Africa from Sierra Leone to the strait of I. Grande.

CAPTAIN EDWARD EDWARDS, R.N.

This officer commisioned the *Pandora* of 24 guns, 160 men, and sailed in September 1790, in search of the mutineers of the *Bounty* and to survey Endeavour straits. On the return from Otaheite, the reefs of Torres Straits were made August 25th, 1791, in lat. 10° South and two degrees of longitude eastward of Cape York. Steering from thence westward, Captain Edwards fell in with three islands, which he named Murray's with a reef which lay between the islands and the ship. This reef was of considerable extent, and during the whole of the 26th, 27th, and 28th, the *Pandora* ran along it without finding a passage; a boat having been dispatched to find an opening on the evening of the 28th, one was reported, but darkness coming on, advantage was not taken of it. The tide meanwhile set the *Pandora* on to and over the reef, into deep water, where she sunk in 15 fathoms, at daylight of the 29th. Unable to save anything from the wreck, Captain Edwards set sail with four boats, August 30th, steering for the north east point of Australia. A keg of water was obtained at the York isles, but the natives proved treacherous.

At the Prince of Wales' Islands good water was found "There is a large sound here" "says Mr. Hamilton the surgeon of the *Pandora*, which we named Sandwich's Sound," "and commodious anchorage for shipping in the bay to which we gave the name of Wolfs" "Bay (having heard here the howling of wolves probably wild dogs).

Leaving this spot September 2nd, Captain Edwards reached Timor with the remainder of his crew and ten of the *Bounty's* on the 14th September.

In 1791, Captain Edwards also discovered Rotumah island, near Fiji, and Ducie island of the Low archipelago.

The track and discoveries of the *Pandora* constructed upon the authority of Lieutenant Hayward, were published in a chart by Mr. Dalrymple in 1798.

The small Schooner, built under the direction of Morrison a boatswain mate of the *Bounty*, but formerly a midshipman in the Navy, and found at Otaheite by Captain Edwards, was commissioned as tender, but parted company at the Palmerston islands, eventually however reaching Samarang in Java. She was a very swift sailer, and is stated afterwards to have made one of the quickest passages ever known from China to the Sandwich islands. She was eventually purchased by Commander Broughton of the *Providence* (the commission after Bligh had transported the bread-fruit to the West Indies) to assist in surveying on the coast of Tartary, and became the means of preserving the crew of that ship, amounting to 112 men, when wrecked to the eastward of Formosa, in 1797. For account of the *Pandora's* voyage. *See*—A voyage round the world in H.M.S. *Pandora* by George Hamilton, Surgeon, R.N. *8vo. Law and Son, London*, 1793.

CAPTAIN GEORGE VANCOUVER R.N.

1790 to 1795.

Captain George Vancouver born about the year 1756, was appointed a midshipman to the *Resolution* in the autumn of 1771, under Commander James Cook in the second voyage made by the great navigator. On his return from that voyage round the world, he

undertook to assist in the outfit and equipment of the *Discovery*, destined to accompany Captain Cook on his last voyage, which was concluded in October 1780. On the 9th December 1781, he was made a lieutenant into the *Martin* sloop; in this vessel he continued until he was removed into the *Fame*, one of Lord Rodneys fleet in the West Indies, where he remained until the middle of the year 1783. In 1784, he was appointed to, and sailed in the *Europa* for Jamaica, on which station he continued, returning to England in September 1789. On the 1st of January 1790, he was appointed to the *Discovery*, but soon afterwards, owing to disagreements between the English and Spanish authorities on the subject of certain proceedings which had taken place on the North West coast of America, the commissioning of the *Discovery* destined for the survey of these coasts was suspended, and Vancouver appointed to the *Courageux* under Sir Alan Gardner, with whom he remained until December of that year, when he was made a Commander, and again appointed to the *Discovery*. The *Discovery* formerly a merchant vessel, built by Messrs Randall and Brent on the banks of the Thames, was purchased for this particular service, copper fastened, and sheathed with plank and copper for the voyage. At the same time, the *Chatham* sloop, of 135 tons, Lieutenant W. R. Broughton was commissioned as a tender, being sheathed with copper in a similar manner. The *Discovery* carried 100, the *Chatham* 45 officers and men. Among Vancouver's lieutenants, were Zachariah Mudge, Peter Puget and Joseph Baker, two of them, officers of his own choice, with whom he was already acquainted. In the first instance, the command of the *Discovery* had been given to Captain Henry Roberts, who had served under Cook during his last two voyages, and was Vancouver's senior, the latter being appointed second in command. At the final commissioning in December 1790, however, Roberts was not again appointed.

If Vancouver had not quite the varied talents and enterprise of Cook, the enormous amount of work compassed by him, show that at least he was as indefatigable. His instructions were of a twofold nature—to settle the Spanish question relative to Nootka sound, and to ascertain the truth of a theory at that time current as to a large and navigable passage to the Atlantic from the North West coast of America. His surveys extend from the Bay of St. Francisco to Cape Douglas of Cook inlet. A vast extent of most intricate coast was by him delineated in the most faithful manner. He determined the insularity of Vancouver island and the character of the archipelagoes to the northward. Lieutenant Broughton under his orders in the *Chatham*, discovered the Chatham islands, King George Sound of South Australia, the Snares (south of New Zealand), and a more exhaustive examination of the Sandwich islands was also made by him during the expedition.

Vancouver sailed from Falmouth Friday April 1st, 1791, calling at Teneriffe and the Cape of Good Hope, discovered King George Sound, touched at Dusky bay (New Zealand) parted company with the *Chatham*, which rejoined at Otaheite, called at Otoo, Matavai bay, and Sandwich islands, Nootka Sound, San Francisco—thence to Sandwich islands, again to the coast of North West America, Juan de Fuca strait, port Discovery, Admiralty inlet. Desolation Sound, Johnstone strait, Broughton archipelago, Fitzhugh Sound, Friendly cove (Nootka), Columbia river, San Francisco, Monterey, Gray harbour, the Marquesas,—Lieutenant Breughton returns to England with dispatches and is succeeded by Lieutenant Puget as commander of the *Chatham*, who visits Hergests islands, after murder of Lieutenant Hergests of *Dadalus* at Woahoo. Search for Los Majos islands, Owhyhee, Mowee, Whyteete bay. Quit Sandwich islands for North America, Trinidad bay, Fitzhugh Sound, Restoration Cove, Millbank Sound, Chatham Sound, Observatory inlet, Salmon bay Port Stewart, Port Protection, western side of Queen Charlotte islands to Nootka, San Francisco, San Diego, Owhyhee, examination of Whyeatea bay, Karakakoa bay, Tyahtatooa, Toeaigh bays, north side Mowee, Woahoo, Attowai. Leave Sandwich islands, sight Tscherikow. Trinity islands, Cook inlets. Prince William Sound, port Mulgrave, port Althooy, Cross sound, George archipelago, port Conclusion, Nootka, Monterey, Marias islands, Cocos, Galapagos, Masafuera, Juan Fernandez, Valparaiso, St Jago, search for isle Grande, St. Helena Capture of Dutch East Indiaman *Macassar*, join convoy under

H.M.S. *Sceptre* for river Shannon, thence to river Thames arriving Sept, 24th, 1795, about a month after the appointment of Mr. Alexander Dalrymple as first hydrographer to the Admiralty.

This voyage occupied from 1792 to 1794, in August of which year, Vancouver was promoted to the rank of Captain. Arriving in England in a weakened state of health he lived until May 1798, not quite long enough to see the three volumes of his book and the accompanying Atlas of charts completed. His brother John Vancouver assisted by Captain Puget completed, and saw the latter part comprising the voyage from Valparaiso round Cape Horn to England through the press. It appears that many remarks of a miscellaneous nature, bearing upon the natural history of the countries visited, together with the laws, religion, customs, &c. of the people, which Captain Vancouver had intended should form a supplementary chapter at the end of the work, owing to his unfortunate decease, were never made public.

Vancouver's longitudes were not in accordance with those of Cook, though the details of his survey have been applauded by the highest authorities. Sir Edward Belcher in the *Sulphur* was afterwards appointed to reconcile these differences, and later on, Captain (now Sir George) Richards in H.M. Ships *Plumper* and *Hecate*.

Survey of the Sandwich islands. The S.W. coast of New Holland, with a sheet of views
View of the Sandwich and other islands. Twelve sheets of charts and views of the N.W. coast of America
The description of Vancouvers Voyage was published in 3 Vols, 4to, 1798, Robinson and Edwards, London

LIEUTENANT ARCHIBALD BLAIR.

1790 (about).

Between 1777 and 1795 this officer was actively engaged in making surveys of parts of the Andaman Islands, the Katwar coast, Salsette, and other places. In 1788-89, he determined the longitude of the Andamans, and of Acheen, and ascertained the meridian distance between Bombay and Suez in 1795, by means of an Arnold chronometer, purchased in India, and found to keep excellent time. Port Blair of the Andaman Islands was named after him, and an account of his survey of this group is given in "Selections from the Records of the Government of India." (Home No. 24). The following were amongst his surveys, afterwards published by the Admiralty.

The Chagos archipelago.
The harbour at Chagos I.
Views of the Chagos archipelago.
Rajapora and Nowa Bunder Roads.
Monarah river (Salsette I).
Strait of Papra.
N.E. harbour (Great Andaman I).
Blair harbour (E. coast of Malay).
Dewgur harbour.

CAPTAIN THOMAS FORREST.

1792.

In November 1774, the above officer of the Hon. East India Company's Service, sailed in the *Tartar** galley, of ten tons, with two Europeans and a Malay crew, to extend trade and explore western New Guinea. He received his immediate instructions from the council at Balambangan, and therein is inserted a clause to the effect that

"You must therefore be as accurate as possible as well as explicit in your remarks and observations. Charts and drawings must be taken, minutely marking everything that may conduce to the above purpose."

The *Tartar* sailed through the Sulu archipelago, southward of Sanguir island, round the south point of Batchian island and Gilolo, along the west coast of Waygiou island, to Dorei harbour in north-west New Guinea. Having examined the coast of New Guinea east and west of Dorei, the return voyage, during which several previously unknown harbours were touched at and surveyed, was made, calling at Mysole and adjacent islands, past the east coast of Gillolo, coasting the southern part of Mindanao, visiting the river of that name and Port Pollok, through the Sulu archipelago, along the north-east and north-west coasts of

*The *Tartar* was fitted with a tripod mast and the oblong sail known as "lyre tanjong." Captain Forrest remarks: Lash two London wherries together, and rig this double vessel in a similar way, and it will beat the fast sailing boats at least three to two

Borneo, to the English factory at Borneo (Bruni). From thence, Captain Forrest made his way to Madras, continuing for part of the voyage in the *Tartar*, but losing his European companions David Baxter and Lawrence Lound at Acheen, they declining to remain longer in the crazy craft—she being in an utterly decayed condition.

In 1783, Captain Forrest, in the brig *Esther* visited and examined the Andaman islands, and in 1783 being at that time the Senior Captain in the employ of the Company, he made a chart of the Mergui archipelago, and also a report upon Junkseylon (Jan Sylan) island. Accounts of these voyages were published by him in 1792. His works contain numerous plans, explicit sailing directions, and some excellent views, as well as a vocabulary of the Mindanao language. The astronomical positions are the weakest part of Captain Forrest's works.

See—A voyage to New Guinea and the Moluccas in the *Tartar* galley, 1774-75-76, by Captain Thomas Forrest. 4*to. London*, 1779, and A voyage from Calcutta to the Mergui Archipelago, &c., by the same author. 4*to. London*, 1792.

Besides numerous views of headlands, &c., Forrest constructed the following rough charts,

Track chart of the *Tartar's* voyage.
Malaleo and Gag harbours.
W. Part of Batchian and Mandioli islands with Bissory harbour.
Selang, Piapis, Offak harbours.
Island of Waygiou, Rawak harbour.
Efbe harbour of Mysole island.
Leron harbour.
Bass harbour, Pera river.
Islands between Sulu and Basilan.
S.W. part of Mindanao.
Bunwoot (Bongo) island.
Leno and Ubal harbours.
Kamaladan (Dumanquilas) bay.
N.E. coast of Borneo.
N.W. coast of Borneo.
Siddo harbour near Acheen.
Part of the Mergui islands.

CAPTAIN MICHAEL TOPPING.

1790-1795.

In 1788, Captain Topping submitted to the Indian authorities a journal kept on board the E.I.C. ship *Walpole*, in a voyage to Madras, with a chart of the Bay of Bengal. In 1790, he surveyed Korangi, and the mouth of the Godavari river, which he performed most creditably, compiling a chart and valuable memoir as its results. During 1792, he was engaged in taking observations for determining the currents in the Bay of Bengal; and he afterwards took a series of levels of the river Kistna, from the sea to Bezwara, with a view to the construction of irrigation works. For these Services, in 1794, he was made chief Surveyor at Madras, where he drew up a general plan for the improvement of the geography and navigation of India.

Captain Topping's Memoir on Coringa (Korangi) with notes by Lieut. Warren and Captain Biden, was published by the Madras Government in 1855. *Selections from Records of Government of India*, No. 19.

REAR ADMIRAL BRUNY D'ENTRECASTEAUX. (French).

1791-94.

The French government decided in the year 1791, at the instigation of the Parisian Society of Natural history to send an expedition in search of the missing La Pérouse. The command was given to Bruny D'Entrecasteaux in the *Recherche*, having under his orders the *Esperance*, Captain Huon Kermadec. They left Brest, September 28th, 1791, touching at Teneriffe, Cape of Good Hope, Port D'Entrecasteaux of Tasmania, west coast of New Caledonia, Bougainville island, port Carteret, Portland, Hermit, Exchequer islands, New Guinea, through Pitt strait to Amboyna. From Amboyna the course taken was along the south-west coast of Australia, through D'Entrecasteaux strait on south side of Tasmania, past North Cape of New Zealand, to Tongataboo of the Friendly islands. The expedition after sighting Espiritu Santo of the New Hebrides, discovered Beaupré islands, anchoring near Observatory island of New Caledonia, (where Cook had also anchored). Here, Captain Huon Kermadec died. The southern part of the Solomon islands was next visited, Dampier strait sailed through, and the north coast of New Britain reconnoitred.

About this time scurvy made sad havoc with the crews of both vessels, and August 21st, 1793, D'Entrecasteaux died of this disease. Waygiou and Bouro were called at in turn, and the vessels passing through the strait of Bouton anchored at Sourabaya, ; and thence the officers and crews proceeded to Batavia. The Dutch at this time were at war with France. This expedition lost 99 men out of the 219 forming the crews, the Commanders of both ships, and Lieutenant Doribeau of the *Recherche*. The journals were brought to Europe by the second lieutenant of that ship, afterwards Admiral Rossel.

See Bruny D'Entrecasteaux Voyage a la recherche de la Pérouse. 2 vols. *4to. Paris* 1808. Also, Atlas du Voyage de Bruny D'Entrecasteaux. *Folio, Paris* 1807.

DON COSME CHURRUCA AND FIDALGO, (Spanish).

1793.

These officers with four brigantines surveyed Trinidad island. Churruca then proceeded to Porto Rico (Cuba) but did not complete the survey. Fidalgo with Noguera and Ciscar surveyed the coast to Porto Bello. Churruca was afterwards killed at the battle of Trafalgar when commanding the *San Juan*.

CAPTAINS W. BAMPTON AND M. B. ALT.

1793.

The above in command of the ships *Hormuzeer* and *Chesterfield* had their discoveries made public in two charts by Mr. Dalrymple in 1798-99. It appears that they sailed in company from Norfolk Island with the intention of passing through Torres Strait, by a previously unknown route. June 20th, 1793, they sighted Murray island (of Edwards) and at Treacherous bay, of Darnley islands, losing a boats crew; and after numerous troubles amongst the reefs of Torres strait, anchored under Stephens island, July 11th. After visiting Campbell island, Bristow island was discovered, and proceeding westward by slow degrees, accounts are given of Dungeness, Warrior, and Dove island of the Six Sisters. Turtle back island, the Cap, and the Brothers, were passed on one side, and Nicols Key on the other. Upon the Cap, Captain Bampton saw a volcano burning, which induced him to name it Fire island. July 31st, Turnagain island was reached,—near here the *Chesterfield* grounded, necessitating a delay of eighteen days, August 20th, steering westward with the flood tide, Talbot island was discovered, near this the *Hormuzeer* grounded. Boats were sent to sound channel, and after infinite labour they safely reached Deliverance island August 27th. After again grounding in the *Hormuzeer*, the straits were eventually cleared August 30th—the passage through occupying 72 days.—The accounts of Bampton and Alt deterred vessels from following the route of Torres Strait, and confirmed the truth of Torres having passed through it, by showing the correctness of the sketch contained in his letter to the King of Spain.

The Bampton and Chesterfield reefs of the Western Pacific were discovered by Bampton and Alt, prior to the passage through Torres Strait above alluded to.

COMMANDER W. R. BROUGHTON, R.N.,

1795-98.

For this voyage, the *Providence*, of 420 tons, river built, formerly intended for the West India trade, which had been purchased for the purpose of conveying the bread-fruit tree to the West Indies, under Captain Bligh, after the mutiny of the *Bounty*, and had returned successfully from this service, was fitted out in 1793, under Commander Broughton. Sailing in April 1794, it was contemplated to survey the coasts of Tartary, northern China and the Korea. The Canary islands, Rio, port Stephens and port Jackson were touched at. From thence, Otaheite, and the Sandwich islands, and Nootka sound, were successively visited. Search was made for Dorina Maria Lajara island; intelligence of Vancouver obtained (early in 1796), and Juan de Fuca inlet anchored in. Commander Broughton then again sailed for the Sandwich islands, where some time was spent in surveying, thence to Japan,

anchoring in Volcano bay, which was surveyed, as also, Endermo harbour. Continuing along the coast to Spanbey island and Marikan (one of the Kuril islands), through Vries strait, and the strait of Tsugar along the East coast of Japan to Yeddo bay, and the Fatsisio islands. From this, the *Providence* sailed for the Loochoo islands, and thence past Formosa to Macao. At Macao, the small schooner built at Otaheite, by the mutineers of the *Bounty* was purchased for £1500, and fitted as a tender, and the voyage continued in April 1797, for the island of Lamay and Pa-chusan island. In May 1797, the *Providence* was wrecked off the island of Typingshan of the Meiacosima group, the crew being rescued by the tender, and conveyed to Canton:—here the greater number were transhipped to the *Swift*, and the East Indiamen under her convoy. Commander Broughton continuing in the tender for the coasts of Tartary and the Corea. Lieut. Hayward one of the officers set adrift with Bligh of the Bounty commanded the *Swift*, which was lost on the return voyage to England with all hands. Visiting and examining June 1797, the Pescadores, Kelung harbour, and Napachau harbour of Great Loochoo, the voyage was continued along the South and Eastern coasts of Japan to Endermo harbour for the second time, thence through Tsugar strait along the west coast of Yesso, to 52° N. latitude, in the gulf of Tartary. Here it was determined to return along the coast of Tartary and Corea. Tsima island was passed, and Chosan harbour visited and surveyed. Sailing thence October 22nd, 1797, Quelpart was partially examined, Macao being again reached 27th November of the same year. From thence, Commander Broughton continued to Madras, through the strait of Malacca, and then to Trincomalee. At Trincomalee passage, was taken to England which was reached in February 1799.

See—Voyage of Discovery to the North Pacific Ocean in H.M.S. *Providence* and tender in years 1795-97-98. by W. R. Broughton. *4to. Cadell and Davis, London*, 1804.

Of the charts published from Commander Broughton's surveys the following may be considered the chief
Coast of Corea and gulf of Tartary with track of *Providence*.
Coast of Japan with continuation of *Providence's* track.
Loochoo islands.
Chart of Volcano bay (Yesso) and Kuril islands.
Chosan harbour, coast of Corea.
Endermo harbour.

CAPTAIN MATTHEW FLINDERS, R.N.,
1795-1814.

Matthew Flinders entered the navy in 1791, and embarked as a midshipman, in H.M.S. *Providence*, commanded by Captain (afterwards Admiral) Bligh. In that voyage, he appears to have acquired a taste for the surveying branch of the profession, in which he afterwards greatly distinguished himself.

On his return to England he joined the *Bellerophon*, in which ship he acted as *aide-de-camp* to Admiral Sir Thomas Pasley, in Lord Howe's action of the first of June 1794.

He then entered as a midshipman on board the *Reliance*, Captain John Hunter, who sailed in 1795, to relieve Captain Philip in the government of New South Wales, and remained with the *Supply* in company for several years on the Australian Station, where he devoted himself to geographical research in examining the harbours and rivers of New South Wales, particularly in circumnavigating Van Diemen's Land and examining its northern extremity, accompanied by his friend Dr. Bass, the Surgeon of the *Reliance*: thus completing the important discovery made by that enterprising officer of the strait which bears his name.

On Lieutenant Flinders return to England in the *Reliance* in 1800, the charts and an account of the new discoveries were published (the variation being allowed upon the bearings, and also in the direction of winds, tides, &c.), which led to his being appointed to the command of an expedition, determined on (in 1800): the object of which was, a complete survey of the coasts of New Holland, doubts at that time existing, as to whether it formed one great land, or consisted of two or more islands.

In February 1801, prior to sailing in the *Investigator* (formerly called the *Xenophon* of

334 tons) Flinders received his promotion to Commander's rank. With his instructions for the voyage, signed by Lords of the Admiralty St. Vincent, T. Trowbridge, and J. Markham, a memoir was furnished by the Hydrographer, Mr. Alexander Dalrymple, respecting the winds and weather to be expected upon the South coast of Australia—and thus the precedent of supplementing the command of a Surveying vessel's instructions with those of a hydrographic nature appears to have been established. With a complement of 76 officers and men, among whom, the name of John Franklin, midshipman (afterwards Sir John Franklin of Arctic fame) appears, the *Investigator* sailed from Spithead, July 18th, 1801, and called at the Cape of Good Hope: here Mr. Crosley the Astronomer appointed to the Expedition was compelled through sickness to leave the ship, taking with him (his private property) an excellent chronometer watch by Earnshaw, and a reflecting circle by Troughton, both of which were a great loss to Flinders. King George sound of Western Australia was reached December 9th, 1801, and the survey of the coast east and west of it at once commenced. Recherche archipelago, the south of Australia Nuyts archipelago, Waldegrave and Flinders' islands, Investigator group, Cape Catastrophe, and Port Lincoln were partly examined in turn. Flinders then visited Spencer gulf, Kangaroo island, Gulf of St. Vincent, and Encounter bay, working through Bass strait to Port Phillip, where he arrived at the latter end of April 1802. Flinders considered he had made a new and useful discovery in being the first to cast anchor in this grand harbour, but afterwards learnt at port Jackson, that he had been forestalled in this, by Lieutenant John Murray, in the Schooner *Lady Nelson.*

Leaving Port Phillip May 3rd, 1802, he passed cape Schanck, rounding Wilson promontory and its isles, Kent group, and Furneaux isles, and arrived at Port Jackson May 9th, 1802, where the crew were recruited in health, and the ship refitted and stored. He had lost eight officers and men in Spencer gulf, and in all, was fourteen ort of his full complement.

In Port Jackson the French expedition under Captain Baudin was fallen in with, consisting of *Le Naturaliste* and *Geographe*, but it was t en contemplated by the Commander of that expedition to order the former to return to France.

Having left two copies of his charts of the South coast of Australia with the governor, Captain Philip Gidley King, R.N.: one set to be forwarded with Flinders' letters to the Secretary of the Admiralty, the other to be retained until his return, or in case of the *Investigator's* loss, to be also forwarded to the same destination, and after twelve weeks stay at Port Jackson, July 22nd, 1802, Flinders sailed with the brig *Lady Nelson*, Lieutenant John Murray, under his orders, and having examined various parts of the East coast of New South Wales, between that port and Sandy cape, anchored in Harvey bay, where the *Lady Nelson*, which had become separated, again joins him.—After a survey of the shores of that bay, Port Curtis was discovered and examined, and Keppel bay with its branches, one of which leads to Port Curtis explored. From thence, the Keppel isles, Harvey isles, and Shoal Water bay, were in turn visited, and partially surveyed, and anchorage found in Thirsty Sound. From this Sound, a boat excursion to the Northumberland islands was made, and expeditions to Broad Sound and Lay island successfully accomplished. Upon this part of the East coast of Australia (now called Queensland) Flinders dwells in enthusiastic terms, especially as to its advantages for a colony, and he also calls attention to the remarkably high tides there observed.

The Percy isles are next examined in detail in his boats, and he spends eleven days in search for a passage through the barrier reef, and so on to the Cumberland isles. Here the *Lady Nelson* which had lost anchors and cables and the greater part of her keel, was ordered to return to Sydney, and on the 17th October, 1802, this little vessel parted company with her consort. An opening through the great barrier reef which here girds the Australian coast was found by Flinders near cape Gloucester, and instructions are given by him explaining how best to make use of this opening. The reefs termed the Eastern fields on the outside of the Barrier are then visited, as also the *Pandora's* entrance to Torres

Strait. Murray islands anchored off, and the natives communicated with, Halfway island visited and theories on the formation of coral islands entered into by Flinders. Prince of Wales islands and Wallis isles, with the entrance into the Gulf of Carpentaria, next occupy him, ann the East side of that gulf is examined. In Investigator road, the ship upon examination is found to be in a state of decay.

The strong representations as to the decayed condition of his vessel, caused Flinders reluctantly to resolve to return to Port Jackson, examining the north coast of Wellesley islands in the earlier part of his return voyage. Having left Sweers island we find him examining C. Van Diemen which he found to be one of a group of islands, thence along the north coast of the Gulf of Carpentaria to Pellew group.

These islands he surveyed according to his means, thence westward to cape Maria, which also proved to be an island; skirting Limmens bight, he circumnavigated the "Groote Eylandt" of the Dutch, and in Blue mud bay, became entangled in a skirmish with the natives.—Cape Shields, Mount Grindall, and the coast of Caledon Bay, next claimed his attention.

Leaving the latter, Feb. 1803, and visiting in turn, Cape Arnheim, Melville bay, cape Wilberforce, Bromby, and the English Company's islands, where he met with English vessels from Macassar, he examined Wessel's Islands, and postponing further examination of the north coast of the Gulf of Carpentaria, sailed for, and duly arrived at Coepang bay, Timor. Leaving Timor April 8th, he proceeded for Goose island bay, searching on the way for the Trial rocks. Here his boatswain died, and many of his ship's company were prostrated with dysentry. Leaving this bay without regret, the "*Investigator*" sailed through Bass's Strait arriving at Port Jackson 9th June 1803, after an absence of nearly eleven months during which the Australian Continent had been circumnavigated. Here their old consort the *Lady Nelson* was fallen in with again. During Flinders absence, the French exploring vessels *Geographe* and *Naturaliste* had sailed for the south coast of Australia. Mr. James Inman afterwards professor of Mathematics at the R.N. College, Portsmouth, and author of a work and tables on Navigation was also at Port Jackson, having been sent out to join Commander Flinders as astronomer, by the Board of Longitude. A survey was held on the *Investigator*, her decayed state verified, and all effort made to restore and reinvigorate his crew, after their exhausting voyage. On the 4th July, the armed vessel *Porpoise* arrived from Tasmania, and Flinders seeing the utterly unfit condition of the *Investigator*, requested the governor to order that vessel to be again surveyed, with the result that she was reported altogether unseaworthy. After weighing other alternatives Governor Phillip Gidley King, offered Flinders a passage in the *Porpoise* to England by Torres Strait in order that he might lay his charts and journals before the Lords of the Admiralty, and obtain, if such should be their pleasure, another ship to complete the examination of Terra Australis. The *Porpoise* was at this time commanded by Mr. William Scott, a senior master in the navy, but he and the greater number of his crew having expressed a wish to be discharged, it was complied with. The command was now given to Mr. Fowler, first lieutenant of the *Investigator*, and another crew of thirty eight men selected from that ships company, Flinders taking the position of a passenger only. He hoped to make some further examination of the dangers of Torres Strait *en route*. and to prepare his charts and journals on the voyage home.

The *Porpoise* sailed from Port Jackson in August 1803, being accompanied by the East India Company's ship *Bridgewater*, commanded by E. H. Palmer, Esq., and the ship *Cato* of London, 450 tons, commanded by Mr. John Park. On the 17th of August, eight days after leading Port Jackson, the *Porpoise* and *Cato* were wrecked upon Wreck reef. The crews succeeded in landing on a sand bank, although the *Bridgewater* appears to have continued her voyage for India, the captain on arrival, reporting all lost. Flinders returned in the ships cutter to Sydney, and in September again made for the scene of the wreck, in the colonial schooner *Cumberland*, of 29 tons, with the schooners *Kotha* and *Francis* in company. Arriving the 7th of October, the shipwrecked crews were divided, some returning to

and such as volunteered continuing with Flinders in the "*Cumberland*" who successfully voyaged through Torres straits, by Wessels island, and Timor, to Mauritius, where the leaky state of the *Cumberland* rendered it necessary to remain. Here, in December 1803, by order of the French governor at Port Louis, Flinders was committed to the Garden prison; the charts and journals of the Investigator's voyage being seized. In 1804, Flinders obtained the opportunity of informing Sir Edward Pellew the English Admiral commanding in the East Indies, of his situation, by means of the sailing of the brig *Ariel*. In August 1805, he was let out of prison on parole, and allowed to visit various parts of Mauritius. From Sir Edward Pellew, Flinders received a reply in July 1807, stating that he had requested the Captain General of the island to permit his departure by H.M.S. "*Greyhound*," and enclosing a copy of a letter from Mr. Marsden the Secretary of the Admiralty, transmitting authority for his release, under the authority of the French minister of Marine. This application was evasively answered, and an expected attack upon Mauritius by the British squadron, caused an abridgement of the liberty hitherto granted to the unfortunate Flinders. A strict blockade of the island ensued. Eventually, in January 1810, Flinders had his liberty confirmed, and sailed from Port Louis for England in the *Otter*, Captain Tomkinson, arriving at Simons Bay, Cape of Good Hope, July 11th. He left the Cape 28th of August in the *Olympia*, touched at St. Helena, and St. Mary's of the Azores, and on October 23rd anchored in Poole harbour. As a reward, Flinders was advanced to post rank, but not dated back as he had hoped, such being against established rule and necessitating an order in council. Unhappily His Majesty the king was at the time incapable of exercising his Royal functions."

The Board of Admiralty were pleased to countenance the publication "of the *Investigator's* voyage, by providing for the charts and embellishments" and in 1814, was published.

A voyage to Terra Australis in the years 1801, 2, 3, in H.M.S. *Investigator*, with an account of the wreck of the *Porpoise* and arrival of the *Cumberland* at Mauritius, and imprisonment of the Commander during 6½ years in that island. By Matthew Flinders, Two 4to. Vols. with an Atlas.

In the Philosophical Transactions of the Royal Society for 1805, Flinders published an account of his discovery that deviation of the compass depended upon attractive bodies in the ship. Experiments verifying this discovery were afterwards made by him at the home ports, and his numerous charts corrected accordingly.

Captain Flinders only lived to complete his charts, and publish his narrative, a work which certainly places him next to Cook amongst the exploring officers of that period. In 1853, the New South Wales government granted a pension of £100 a year to Mrs. Flinders, the appropriation to be reversionary to her daughter, the home government, in spite of the strenuous exertions of Sir Francis Beaufort, failing to recognise any special claim in her case.

Captain P. P. King R.N. who followed in the footsteps of Flinders, in the same quarter of the globe, and who ended his days in New South Wales three years after the pension was granted, spoke thus of Captain Flinders upon the occasion.

"This distinguished officer had laid the colonists of Australasia under great obligations, by having executed a series of skilful surveys with less equipment than any navigator who had been engaged in similar duty during the last half century. By his careful and correct surveys he had afforded all the commercial cities of Europe and America the means of safe communication with the shores of Australasia. And yet how poor were the means placed at his disposal. In a mere dingy he had examined Botany bay, Broken bay, and the Illawarra coast; and his charts remained to this day (1853) not only sure guides to the mariner, but mementos of his courage, skill, and perseverance.

Independently of his eminent services as a nautical surveyor, Captain Flinders had the high merit of having introduced many distinguished men into the service. Sir John Franklin and many other eminent names of navigators, botanists, artists, would be included when tribute was paid to the memory of Flinders."

ALEXANDER DALRYMPLE, F.R.S.
Hydrographer, 1795-1808

CHAPTER II.

Dalrymple. Beautemps Beaupré, Galiano and Valdez, Wedgborough and White, Horsburgh, Wilson, Humboldt, Grant, Baudin, Peter Heywood, Cevallos, Murray, D'Urban, Krusenstern, Lisiansky, Court, Daniel Ross.

In 1752, Alexander Dalrymple entered the service of the Honourable East India Company as a Writer, leaving England in that year for Fort St. George (Madras); he was then in all probability about sixteen years of age. After a service of five years, he was appointed sub-secretary and he relates that

"Geography and discoveries had almost from infancy been the fond object of his attention, and although he went to the East Indies at an early age, neither the circumstances of life in which he was placed, the disposition of his companions, nor the want of books, could over-rule the natural propensity of his mind."

Every young man enters life with a passion to emulate those characters who have gained his admiration. In most men the rubs of life soon blunt this passion; in some it prevails over all difficulties.

This was the case with Dalrymple. The desire for information having led him to examine the old records at Madras, he found from them, that the Company in former years placed a great value on the commerce of the Eastern islands, and were solicitous to regain a portion of it, after they were deprived thereof, by the intrigues of the Dutch. From these examinations, and printed accounts of early voyages, he was led to believe, that this valuable branch of commerce might not only be regained, but extended.

In 1759, after the siege of Madras, upon the resignation of Du Pré, he succeeded to the

secretaryship at Fort St. George, at a salary of 1200 pagodas or £500 per annum, but this he was contented to resign, in order to fit out a small vessel in prosecution of the end he proposed.

The authorities at Fort St. George, in a letter dated 17th April 1762, to the Company in England, speak of him thus,

"Mr. Dalrymple is a man of capacity, integrity and unwearied application, qualities which we hope and believe are sufficient to entitle any man to your protection and favour."

In June 1762, Dalrymple with an assistant (Mr. Kelsall) left fort St. George in the ship *London* for Sulu, in which he appears to have visited Balambangan, returning to Madras in the ensuing year, having in the mean time sketched out a plan for forming a settlement, and suggested that he may return to England to lay his scheme before the Company in person. This, the governor and council objected to, and order Dalrymple to again proceed to Sulu in the *Neptune* and return from thence direct to England.

In July 1763, therefore, he embarked, and having reached Manila, in an interview with the Sultan of Sulu, obtained the cession to the East India Company of the northern part of Borneo and islands adjoining, although it had previously been the intention of the Sultan to vest the government of these districts in his son Saraphodin.

The governor of Madras had proceeded to England at the end of 1763, and his successor should, according to arrangement, have sent a ship to Sulu the ensuing season. This was not done, and Dalrymple continuing to China, there found a letter enclosing an extract from the Company in England to fort St. George, directing that "Mr. Dalrymple should be appointed our Resident in Sulu if he chooses it." The ship bearing these tidings, reached Madras in January 1764, and had the authorities thought fit to dispatch her at once to Sulu, Dalrymple would have acted as suggested by the Company. He now resolved to return home, and leaving Canton in January 1765, reached England in July of the same year.

Here he found the Company inclined to look coldly on his plans, the terms did not suit; and in a succession of memorials, he begs at any rate, should no assent be given to his suggestions as to a new settlement in Sulu, that he may be restored to the office of Secretary at the Madras establishment, which he had relinquished nine years previously.

Much correspondence of a vexatious nature now appears to have taken place between the Company and Dalrymple, extending over the next three years. The former did not see their way towards carrying out his suggestions, and evidently feared the first outlay, set down at about £50,000; no certain return for so large an expenditure seeming probable.

Dalrymple appeared to have been indefatigable in his solicitations in this matter, showing strength of mind and considerable warmth of temperament, pointing out that he was actually a poorer man than when he entered the Company's service, and appealing to the public, states, that he is prepared to abide their decision "with heart felt gratitude, or manly resignation." Eventually, in 1776, he returned to Madras in the civil service of the East India Company, being appointed a member of council, to which he was entitled, from his original standing as a Writer in 1752.

During the twelve years which had elapsed between his return to England in 1765 and 1776, he published several charts and plans of coasts and ports at that time visited by the Company's vessels in the East. The year 1777, again finds him the bearer of dispatches to England, notifying the deposition and imprisonment of Lord Pigot (Governor of Madras).

In 1779, he was appointed by the East India Company to examine their ships journals, and publish charts and nautical instructions, which eventually, amounted to 58 charts, 740 plans, 57 views of land; altogether 855 plates; also, 50 nautical memoirs. Dalrymple thus became the first East Indian hydrographer, although Captain John Ritchie, who was sent in the *Diligent* in 1770-71, to make a cursory survey of the coasts and islands around the Bay of Bengal, had formerly been termed hydrographer to the United India Company. He certainly made 7 charts, but for want of the necessary instruments and appliances, his work was far from being of a reliable nature, and Dalrymple, who published an

account of it in 1784, draws attention to the fact, that it was only intended as introductory to "a general or accurate survey of the whole."

In 1795, when the Hydrographic Office of the Admiralty was established, Earl Spencer, being at that time president of the Admiralty Board, appointed Dalrymple the first hydrographer, thinking him the fittest person for that station, he having been for sixteen years employed in the same capacity by the East India Company. At this time, he must have been upwards of sixty years of age, allowing him to have been sixteen when he entered the Company's service as a Writer in 1752.

The substance of the minute forming the Hydrographic Department of the Admiralty dated August 12th 1795, ran as follows:—

"The great inconvenience especially when ordered abroad, felt by officers commanding His Majesty's Ships respecting the navigation, has led us to consider the best means for furnishing such information, and preventing the difficulty and danger to which His Majesty's fleet must be exposed from defects on this head.

On an examination of charts in office, we find a mass of information requiring digest, which might be utilised, but owing to the want of an establishment for this duty, His Majesty's officers are deprived of the advantages of these valuable communications.

In other countries, considerable establishments have been formed for this object.

We therefore propose that a proper person be fixed upon to be appointed Hydrographer to the Board, to be intrusted with the care of such charts &c. as are now in office, or may hereafter be deposited, and to be charged with the duty of collecting and compiling all information requisite for improving Navigation, for the guidance of the Commanders of H.M. Ships.

The extent of such an establishment not to exceed the sum of £650 per annum, in aid of which, £100 a year given to one of the clerks of our Secretary, for his care of the charts above mentioned, and £80 a year for care of the office papers, will be applied, so that the actual expenses of this new establishment will not exceed £470 per annum."

The British Navy at this period boasted no actually recognised nautical surveyors, except perhaps Captain Vancouver, who had returned the previous month from the N.W. coast of America, and Commander W. R. Broughton, who, after the wreck of the *Providence* in the Meiacosima group of China, was continuing his explorations and surveys in Japan and the gulf of Tartary, in the small schooner purchased at Canton, as a tender, and formerly alluded to as the craft built at Otaheite by the better disposed of the mutineers of the *Bounty*.

Mr. Græme Spence was also about this time employed in making surveys of the home coasts in a vessel commanded by a naval officer. Cook's career of discovery had extended from 1768 to 1776. De Borda had performed service in the gulf of Guinea and amongst the Canary islands. There had also been amongst foreign surveyors,* Tofino, La Perouse, Malaspina, and D'Entrecasteaux, all of whom have already been alluded to. Lieutenant Matthew Flinders had explored the coast of New Holland in 1795, and upon returning to England in 1800 in the *Reliance*, his charts were published, and plans for further exploration having received Royal approval, he joined the *Investigator* for this purpose with Commander's rank.

Thus, Flinders may be said to have been the first naval surveyor employed abroad who started under the auspices of the Hydrographic Department, although record does not show that he received any extra remuneration for his surveying services.

To return to Mr. Dalrymple, the now officially established hydrographer of the Admiralty.

It appears that the Board permitted him to continue in the same capacity to the East India Company, and to have approved of a staff to assist him, consisting of one assistant and a draughtsman, to which in the following year, were added three engravers and a

* In 1753, M. l'Abbé de la Caille, connected St. Helena and Table bays, at the Cape of Good Hope, by triangulation, and later on in the same year, triangulated the island of Mauritius in the most scientific manner, by means of a sextant only. His astronomical positions to within a few seconds, and distances to a few feet, remaining unshaken to the present day. He does not appear to have delineated the coast-line, or obtained soundings.

See—Journal of a voyage to the Cape of Good Hope &c. by M. L'Abbé de la Caille. 12 *mo.* *Paris*, 1763.

copper plate printer. It was at this time 1796, writes an eminent authority, that the Messrs Walker, became connected with the Hydrographic Department, afterwards retaining their connection with it for over 60 years as engravers and draughtsmen, with great credit to themselves, and equal benefit and advantages to the public service.

When a period of twelve years had elapsed from the date of Mr. Dalrymple's appointment to the Hydrographership, which period had been spent in arranging documents, compiling charts, and engraving plates, the Admiralty began to feel impatient at the non-productiveness of the Department, and an order was given the Hydrographer to supply at once charts to the Navy from his own Department, and by purchase from private firms. Symptoms of Dalrymple's activity in other respects are however to be found; for instance in the memoir he had prepared for the guidance of Captain Flinders in 1801, and in the publication in 1798-99 of the discoveries of Captain Edwards of the *Pandora*, and of Bampton and Alt, commanding the ships *Hormuzeer* and *Chesterfield*, in Torres Strait and the south west Pacific.

It was then that Mr. Dalrymple applied for the appointment of a committee of officers to consider how best could be carried out their Lordships' wishes. His request was complied with; it consisted of Captains Sir Home Popham, Columbine (who had made surveys in the West Indies), and Thomas Hurd. The main result was, that the Board decided upon pensioning Mr. Dalrymple and appointing Captain Hurd in his place.

On the 28th May 1808, Mr. Dalrymple was, after a somewhat unsatisfactory interview with Mr. Pole the Secretary, officially invited to resign.

"Having had under their consideration several new arrangements which are intended speedily to be carried into execution, in the Department over which you at present preside, which arrangements will require great and continued exertions on the part of the Hydrographer, and their Lordships being fully aware that at your advanced period of life, it would not be possible for you to undertake and carry through measures of such a laborious and complicated nature &c."

So ran the invitation. At this date, Dalrymple had been nearly thirteen years hydrographer, and must have been at least seventy five years of age. He protested strongly, and appears to have felt his position keenly, but eventually became by his own showing more inclined to accept his position cheerfully, for he quotes "Cotton," as follows:—

To be resigned if ills betide,
Patient if favours he denied,
And pleased with bounties given;
This is truly wisdom's part,
This is that incense of the heart
Whose fragrance mounts to heaven!

Dalrymple was a man of undoubted ability, with a vigorous intellect, and a strong unbending will. He was an F.R.S. and ranked high among the scientific men of his day. In 1768, he was offered the charge of the memorable expedition to the Pacific to observe the transit of Venus afterwards entrusted to Cook, but declined it because the rank of a naval officer could not be accorded him. A precedent for such a favour might have been found in Halley, who was made a post Captain without previous service in the Navy for a somewhat similar service.

While hydrographer, Dalrymple was strict to a degree towards those in his department, all of whom at that time received their pay weekly through him, a portion of which, was invariably deducted for absence, whether from sickness or any other cause; the only holiday he allowed in the year was Christmas Day. He never recovered from the mortification he experienced at his retirement, and died in a few months.

All his private Hydrographical works and copperplates had been by his will offered for sale, first to the East India Company, and then to the Admiralty; but being declined by both Boards on account of the price, were sold by public auction, the latter as old copper; they were subsequently through the exertions of Mr. Walker, privately obtained for the Admiralty, the plates amounting to one hundred and thirty

Up to the time of Dalymples' retirement, besides Flinders already alluded to, and who was confined a prisoner by the authorities at the island of Mauritius, on his way to England with the results of his voyage, there were in the surveying field, Captain Peter Heywood (formerly of the *Bounty* under Bligh) who had made a consecutive series of chronometrical measurements in the Indian Ocean and China Sea, and Captain James Horsburgh. The latter had been introduced to Dalrymple, but owing to the refusal of both the East India Company and the Admiralty to undertake the expense of publishing his works, he was compelled to undertake them himself, in the form of the celebrated East India Directory, afterwards so well known and appreciated.

Captains Court and Daniel Ross of the H.E.I.C.S. had surveyed respectively parts of the Red Sea and coast of China in 1804 and 1807. Baron Humboldt, Cevallos, and Galiano were also contributors to hydrography about this period.

Dalrymple appears to have been an eminent compiler and hydrographical historian, and judging from the prefaces of some of his works, he does not attempt to conceal his contempt for those voyagers who approach inaccuracy, in the various journals and narratives which come under his notice.

Undermentioned are the majority of the works of Dalrymple.

Collection of charts, *folio*, 1769-89. Collection of charts, &c. in East Indies 3 vols. *folio*.
General Introduction to charts and memoirs published by A. Dalrymple, 4*to*. 1772.
Essay on the most commodious methods of Marine Surveying, 4*to*. 1771.
Memoir of a chart of the China sea, 4*to*. 1771.
Journal of the Schooner *Cuddalore* on the coast of China, 4*to*. 1771.
Memoir of the chart of the west coast of Palawan, 4*to*. 1771.
Historical collection of Voyages and Discoveries in S. Pacific ocean being chiefly translations from Spanish and Dutch writers, 1770-71.
Voyages dans la Mer du Sud, par les Espagnolo, et les Hollandois; trad. par M. De Fréville 8*vo*. Paris, 1774,
Oriental Repertory, 2 vols. 4*to*. 1793. Essay on Nautical Surveying, 4*to*. 1806.
Collection of Nautical Memoirs and Journals, 3 vols. 4*to*. 1808.
Also, five volumes of tracts upon scientific and miscellaneous subjects, published between the years 1767 and 1808.

Views of Panay and Negros.
Views of Negros and Mindanao.
4 Sheets of views on coast of China.
Port Mangarin.
Harbours in Balambangan.
Island of Geby.
Toeratte and Bonthain bays (Celebes).
3 Sheets of views on the coast of Celebes.
Sulu Archipelago.
Coast of Borneo in vicinity of Sandakan bay, with Balambangan I.
Views in straits of Sapie, Sumbawa, &c.
Views on coast of Hainan.
Views of Cochin China.
Banton and Marinduque.
N. end of Luzon and Babuyan islands.

M. BEAUTEMPS BEAUPRE.

1791-1855.

Born in 1773, M. Beautemps Beaupré, who by his great talents raised himself to scientific distinction, died in 1855 at the age of 82 years.

He was appointed first geographical engineer to the surveying expedition despatched by the French government under Admiral Bruny D'Entrecasteaux, in search of the unfortunate La Pérouse.

The construction of the atlas of this voyage, afforded M. Beaupre an opportunity for improving the methods of hydrographical surveying, and the 39 charts which it contains were at the time unequalled. Under the first Napoleon, M. Beaupre was constantly employed in surveying the rivers and ports of the North Sea, and in examining the Adriatic and other coasts to which the views of the Emperor were directed.

But the great work which occupied him for twenty years, and which he had the satisfaction of being enabled to complete, was "Le Pilote Francais," in six atlas-folio volumes, embracing a coast-line of 466 leagues, and including 613 sheets of charts and plans.

The following attribute was paid to his memory by one of his fellow labourers in the hydrographic field.

"Few lives were more useful than that of this distinguished *savant* and estimable man. For sixty years he devoted himself to that science in which he took delight and excelled. In his career he did eminent service to science, and placed himself in its foremost ranks. He had the good fortune to see this position assigned to him by public opinion, with no rival jealousy to dispute the high place which success had gained for him. Never, have his works been slighted. If the practical part of his career had been trying and full of fatigue, his dealings with others were always marked by condescension. He was affable and considerate to all."

Hydrography is one of the sciences most eminently useful to man. In presenting to mariners the means of navigating, maritime surveyors become an auxiliary to the naval force of a country; they preserve many lives from wreck, and facilitate maritime commerce, the great source of national prosperity. Under all these aspects, no science has greater right to our solicitude, to our gratitude, and to our respect.

Commencing his career at an early period of life under the celebrated geographer Nicolas Buache, Beautemps Beaupré at the age of twenty one, embarked as Hydrographic Engineer in the expedition under the orders of D'Entrecasteaux, which was sent in 1791 to search for La Pérouse.

By a fatality attaching itself to nearly all French expeditions of discovery, D'Entrecasteaux's ships, were in sea-worthiness, quite as bad as those of La Pèrouse, of which he went in search; and, when one contemplates the difficulties surmounted by Beautemps Beaupré with ships so ill adapted for the service on which they were sent, it is impossible not to admire still more the surveys which he made, with such means, on the coast of New Holland, Van Dieman's Land and several parts of the Pacific.

The method which he employed in these works was not his own, but he had the merit of being the first to adopt it, and bring it into general use. He also contributed to nautical surveying, facile and correct appliances, before unknown.

The end of D'Entrecasteaux's expedition is known. The locality where Pèrouse and his companions were wrecked, of whom some were living at the time, was seen at a distance; but, among a variety of islands, all of which it was impossible to explore, who could say which of those before them, was actually that of which they were in search, and which was the only object of the voyage. There was nothing to lead to such a conclusion; the wind and current were against approaching it, and the two ships which formed the expedition were altogether deficient in the qualities necessary to overcome such obstacles.

Important contributions to hydrography and to natural history were obtained. In an unhealthy climate, disease and death made sad ravages in the *Recherche* and *Esperance*. The chief of the expedition and the second in command died, and the two ships reached Java in a deplorable condition, where more evils followed: this was in the latter part of 1793. Two years before, when they left France, violent civil discord had prevailed. This evil had increased during the voyage, and manifested itself among the officers of the expedition. The adherents of the old system were the least in number, but with the support of the Dutch government, in the port at which the ships had arrived, they became powerful, and used that power with rigour against the opposite party.

The greater part of the officers and naturalists of the expedition who had embraced the principles of 1789, and who, notwithstanding the errors and excesses of the revolution, adhered to the flag of the country, were thrown into prison at Sourabaya. Although joining their party, Beautemps Beaupré was not included in this measure. His personal character, and the acknowledged usefulness of his labours, found grace during political strife, and he preserved his liberty. Returning to France in 1796, he was appointed Chief Engineer to the Hydrographic Office; and, for some years, employed in the compilation

of the charts resulting from the voyages of Marchand * and D'Entrecasteaux. The superiority of his work obtained him the attention of Napoleon; who entrusted to him successively, the survey of the Scheldt, those of the coasts of Illyria and Dalmatia, the mouths of the Ems, the Elbe, the Weser, and other rivers.

After the Restoration of 1816, he undertook his great work of the survey of the coasts of France, from Dunkerque to Bayonne, and devoted himself to it with untiring zeal for the space of twenty-two years; always foremost in the various duties, and never leaving any important point without due personal examination He delighted in hydrography for its own sake.

In the year 1841, when at the age of sixty-five years, he considered that he had justly earned repose, he consented to undertake his last hydrographic exploration, that which had for its object, to determine the changes which had taken place in the bars at the mouth of the Seine, in the course of the seven preceding years. It was then for the first time that he had a steam vessel placed at his disposal. Struck with admiration at the facility which the employment of such means afforded him in his work, he exclaimed, "would that I could again commence my career that I might have the pleasure of surveying with so much ease."

In occupying himself conscientiously and assiduously in works of exactness, he gratified his desire of truth; in rendering, by his daily avocation, a service to his fellows, he satisfied his spirit of benevolence. He carried his ideas of modesty and simplicity to their utmost. He was deaf to praise.

A compliment was paid him which he appreciated, when in 1852, the Emperor, who was then President of the Republic, ordered that his bust in marble, should be placed in the Hydrographic office.

M. Ducos, the Minister, after having assisted at the inauguration of this bust, proceeded to the residence of Beautemps Beaupré to offer him his congratulations. The venerable man, highly enjoyed this mark of respect. Soon afterwards his health underwent a change. He was permitted to pass away quietly, surrounded by his family and friends.

His career was made up of a succession of works of acknowledged daily practical utility. As long as the shores of France preserve their general condition, and their detail remains unaltered by any extraordinary change of nature, navigators will bless the name of Beautemps Beaupré.

The following works were published by M. Beautemps Beaupré:

Atlas du Voyage de Bruny D'Entrecasteaux, *folio*, Paris 1807.
Methodes pour la Levee et la construction des cartes et plans Hydrographiques, pub. en 1808. *4to.* Paris 1811.
Description Nautique de la Cote de la Mer du Nord, depuis Calais Jusqu'a Ostende, *4to.* Paris 1823.
Le Pilote Francais, Six Atlas folio vols: Paris (about 1840).
Exposé des Travaux relatifs a la Reconnaisance Hydrographique des Cotes occidentales de France, *4to.* Paris 1829.
Note sur les opérations Hydrograpiques a executer dans le voyage de la Bonite, *8vo* 1837.
Rapports sur les Rades, Ports, et Mouillages de la Cote orientale du golfe de Venise, *8vo.* Paris 1849,

COMMANDERS GALIANO AND VALDEZ (Spanish)

1795 (about)

The voyage to the N.W. coast of America by Commanders *Galiano* and *Valdez*, in the Spanish ships *Sutil* and *Mexicana*, which were unexpectedly fallen in with by Vancouver, in the course of his voyage, to the eastward of, and inside Vancouver Island, was the last expedition attempted by the Spaniards for discovery in the North Pacific Ocean. A somewhat meagre account of it was published by the government at Madrid,

* Voyage autour du Monde, pendant les années 1790-92; précède d' un Introduction Historique; auquel on a joint des Recherches sur les Terres Australes de Drake; et un Examen critique du Voyage de Roggeween; avec cartes, par C.P. Claret Fleurieu. *4 vols.* Paris 1798.

in 1802. There is, however, a valuable historical introduction prefixed to it. The book itself is not equal to the more elaborate work of Vancouver.

Galiano, also, when in command of the *Soledad* frigate in 1802, having four chronometers on board, for the purpose of running meridian distances, visited Naples, Smyrna and the Levant, Black Sea, Alexandria, and the coast of Africa. He was killed at Trafalgar in command of the *Bahama*.

LIEUTENANTS J. WEDGBOROUGH AND R. WHITE.

1796.

The above officers, of the East Indian Company's Service, sailed from Macao in July 1783, in the packet *Antelope*, under Captain Henry Wilson. The *Antelope* ran on a rock near one of the Pelew islands and became a total wreck. The castaways built a small vessel, and sailed in her for Macao in the following November, taking with them Prince Lee Boo, who died in December 1784, at Rotherville, of small-pox.

In 1790, the chart made in the *Endeavour* and *Panther* by Captain McCluer, was drawn by Lieutenant Wedgborough, and this officer also made a chart of the Laccadive islands.

Captain McCluer, whose services have been previously alluded to (p. 15), sailed in the *Panther* for the Pelew islands, to report the death of Prince Lee Boo, taking with him Wedgborough and White as lieutenants. Having carried out this service, and made an examination of the west coast of New Guinea, the *Panther* returned to the Pelew islands, where McCluer settled.* Wedgborough return to Bombay, where he arrived August 17th, 1793.

In 1796, the first document deserving the name of a chart of the Red Sea, was drawn by Lieutenant White, for which he received much praise and his promotion.

See—Memoir on the Indian Surveys, to 1878, p. 5 to 7.

CAPTAIN JAMES HORSBURGH, F.R.S.

1796-1812.

James Horsburgh was born at Ely, in the County of Fife 23rd September 1792. At the age of sixteen, having acquired the elements of mathematical science, of book-keeping, and the theoretical part of navigation, he was apprenticed to Messrs Wood, of Ely. He sailed in several vessels during his three years' servitude, chiefly in the coal trade, from Newcastle to Hamburgh, Holland, and Ostend. In May 1780, his vessel was captured by a French ship, near Walcheren island, and in consequence, he became a prisoner at Dunkirk.

After his liberation, Horsburgh voyaged to the West Indies and Calcutta. Shortly after his arrival in India, Mr. Briggs a ship builder, obtained for him the appointment in August 1784, of third mate of the *Nancy*, bound to Bombay. He sailed for two years from the port of Calcutta, and in May 1786, when serving as first mate of the *Atlas*, and bound from Batavia to Ceylon, had the misfortune, through making use of an erroneous chart, to be wrecked upon the island of Diego Garcia.

From Diego Garcia he went to Bombay, and there joined the *Gunjavar*, afterwards, becoming first mate, in which capacity, he continued to voyage in several large ships, for ten years, between Bombay, Bengal and China.

In 1791, he joined the *Anna*, making two voyages to China by the Eastern routes, availing himself of every opportunity to collect observations likely to prove useful to navigators. He taught himself drawing, etching, and spherics from Robertson's "Elements of Navigation," often occupying his time after the hours of duty, till long after midnight, in his endeavour to perfect himself in these attainments.

* Captain McCluer in 1795, sailed from the Pelew islands to Macao in an open boat, where he bought a vessel, and returned to Pelew: having called at Bencoolen, he again set sail for Bombay, and was never afterwards heard of.

The observations made during these two voyages to China, enabled him to construct three charts; one, of the strait of Macassar; another, of the western part of the Phillipine islands; and the third, of the track from Dampier strait, through Pitt passage towards Batavia, accompanied by sailing directions.

These labours he presented to Mr. Thomas Bruce, a gentleman who had previously been his ship-mate. Mr. Bruce having shown the manuscript to several commanders of the E. I. Cos. ships, it was transmitted to Mr. Alexander Dalrymple, the E. I. Cos. hydrographer, and published for the use of their ships. The authors' satisfaction was heightened by a letter of thanks, with a pecuniary gift for the purchase of nautical instruments.

In 1796, Mr. Horsburgh arrived in England as first mate of the *Carron*, and met Mr. Dalrymple, by whom he was introduced to Sir Joseph Banks, Dr. Maskelyne (the astronomer royal) and other scientific gentlemen.

In the *Carron* he proceeded to the West Indies and afterwards to Bombay, and on his arrival at that port, in April 1798, obtained command of the *Anna*. In this vessel he made several voyages to China, Bengal, and Madras, and two to England—one, from China direct, and one from Bombay.

He purchased the astronomical clock made by L. Berthoud for the ships that went in search of La Pérouse; it having been brought to Bombay and put up for sale after the return of the ships to Batavia. This clock, which had an excellent composition pendulum he generally set up at Bombay, and at Canton, to assist him in rating his chronometers, and in observing a series of the eclipses of Jupiter's satellites, at each of those places, which he transmitted to the astronomer royal.

From April 1802 to February 1804, Mr. Horsburgh kept a register of the rise and fall of the mercury in two marine barometers, taken every four hours, day and night, at sea and in port. This experiment, proved the regular ebb and flow of the mercury twice every twenty four hours, within the tropics, and that it was diminished, or, sometimes entirely obstructed by the influence of the land; a fact which seems not to have been previously known. This register was presented to the Royal Society and an abstract thereof published in the Philosophical Transactions for 1805. He then produced a chart of Allas strait, which Mr. Dalrymple caused to be engraved.

In 1805, on his return to England, he published several charts, which were engraved by Mr. J. Walker. On this voyage, n in the *Cirencester*, he had for a fellow passenger, Captain Peter Heywood, R.N., and from him, obtained much valuable assistance in afterwards arranging his various works for publication.

In the spring of 1806, Captain Horsburgh was elected a fellow of the Royal Society. In October 1810, he was appointed by the Court of Directors of the East India Company their hydrographer, in the place of Mr. Dalrymple deceased. The importance of the subject of compiling a trustworthy Oriental Directory, was first impressed upon his mind, by the circumstance of his wreck, on Diego Garcia island, in 1786. Captain Heywood strongly urged him to follow up his good intentions on this subject. The first part of his celebrated work appeared in 1809, and for it the Court of Directors granted him a hundred guineas; the second part was published in 1811.

Captain Horsburgh died in May 1836, aged 74 years. To him, Eastern hydrography is indebted more than to any other individual, although he conducted himself, no especial expedition, of discovery or surveying. At his death, a monument was raised to his memory by his numerous friends and admirers in this country. In the East, where he laboured so long, and so zealously and successfully, for the cause of navigation, a durable tribute to his worth will be recognised, in the Horsburgh lighthouse, by every voyager who may visit the important port of Singapore. The supplement to Murdoch Mackenzie's work on Marine Surveying, was written by Horsburgh, and published in 1808. The late Commander Dunsterville of the Hydrographic Department of the Admiralty, after the death of the

author, more than once revised, and brought up to date, his famous directory. Of Horsburgh's works the following may be mentioned:—

China sea in two sheets.
Chart of Malacca strait.
Chart of entrance to Singapore strait.
Chart of Bombay harbour.
Islands and channels near Formosa.
A chart in two sheets from lat. 38 S. to the Equator comprising cape of Good Hope, Madagascar &c.
Peninsula of Hindostan. Chagos, Maldive, Laccadive islands, and Ceylon.

Directions for sailing to or from the East Indies, China, New Holland, Cape of Good Hope and the inter-jacent ports, compiled chiefly from original journals and observations, made during twenty one years in navigating those seas. 2 vols. 4to. 1811.

In 1816, he published his Atmospheric Register for indicating storms at sea, and in 1830, "Icebergs met with in the Southern Hemisphere."

In 1832. Captain Horsburgh wrote a paper on the Navigable channels separating the atolls of the Maldive islands. *R.G.S. Journal. Vol 2. p. 72.*

CAPTAIN WILSON

1797.

One of those energetic and able navigators of the last century, Captain Wilson, though hardly to be included in the category of maritime surveyors, added to no inconsiderable extent, to the hydrography of the western Pacific.

When in command of the ship *Duff*, Captain Wilson conveyed from England, eighteen missionaries of the church of England, arriving and anchoring in Matavai bay of Tahiti, in March 1797. After seeing his charges comfortably housed and established, he sailed for Tongatabu in the Friendly islands towards the close of March, when ten more missionaries were landed. Captain Wilson then visited and surveyed, several of the Marquesas islands: leaving a missionary there, he returned to Matavai in July. After coasting along and partially surveying the south and western shores of Huahine, he returned to Tongatabu, and thence to Canton and England. In the course of his voyage in September 1797, the Duff or Wilson islands, situated southward of the Solomon group, were discovered and examined, and also a few of the islands forming the eastern part of the Fiji group.

Of the Low Archipelago, in May 1797, he discovered Manga Reva islands, which he named after Lord Gambier, and Timoe or Crescent island.

In the course of a second voyage, made a few years later on, to Tahiti, the *Duff* was captured by a French privateer.

Captain W. Wilson the nephew of the above, afterwards commanded the *Royal Admiral*, and during the course of voyages made to the missionary stations established in the Pacific, continued to gain information of a highly useful character in Polynesia, which proved of great value in the, at that time, almost unknown state of the hydrography of that region.

BARON ALEXANDER DE HUMBOLDT

1799-1804.

The above distinguished *savant* was born at Berlin 1769. He appears to have cultivated assiduously every branch of science, but chemistry and the phenomena of animal electricity chiefly attracted his attention. Possessed of an ample independent fortune he was able to add the advantages of travel to that of study, and was thus enabled to intermingle geography aud hydrography with the numerous subjects he became so thoroughly master of.

When the expedition of Baudin to the southern hemisphere was first projected, it was expected that Humboldt would accompany him, but the delays caused by the wars, in which France was then involved wearied his patience and prevented his remaining to take part in that not too fortunate expedition.

In 1799, he fitted out an expedition at his own expense to solve the physics, natural history, and economical resources, of numerous countries in the West Indies and American continent. His researches in magnetism, etymology, zoology, botany, and geology, cannot be spoken of here; suffice it to say, that on the 6th of June 1799, he sailed from Coruna

with his friend Aimé Bonpland,* calling and observing at Teneriffe, Cumana, Margarita, New Barcelona and La Guayra. He then proceeded inland subsequently continuing to Port Cabello. Tortuga, Orchilla, Port Abacou, St. Domingo, Jamaica and Cuba.

Here, with Bonpland, he employed himself in surveying the coasts of the latter island, and in making astronomical observations.

Humboldt had promised Baudin, that should the projected expedition to the Southern hemisphere be put into execution, that he would certainly join it; accordingly, when a report reached him, that the *Geographe* and *Naturaliste* had sailed from France, with instructions to double Cape Horn, and touch on the coasts of Chili and Peru, he left Cuba to cross South America, in order to meet the French navigator.

It was not until he reached Quito, that he learned that Captain Baudin's expedition had taken a different course, and was to circumnavigate the globe from west to east.

In March 1801, with Bonpland, he arrived at Carthagena, where the travellers met Fidalgo. After visiting numerous places and adding vastly to the geographical details of South America, Guayaquil was reached in the commencement of 1803. From this port, a voyage of 30 days brought the party to Acapulco.

Returning to Mexico, some time was spent in arranging their collection of plants, and geological specimens, in calculating astronomical observations, and in constructing the geological atlas, for which they had collected materials.

In January 1804, the eastern slope of the Cordilleras was examined, and after geometrically measuring the heights of some of the important volcanoes such as Puebla, Popocatepetl &c., Vera Cruz was arrived at, from whence they set sail for Havannah. After remaining here for four months, they continued to Philadelphia, and having spent some weeks in studying the political character of the United States, returned to Europe in August 1804.

Humboldt, in the course of his travels, determined the position astronomically of more than 300 places. No other individual has ever contributed so largely to physical geography. In 1829, at the invitation of the Emperor Nicholas, he visited Siberia, and amongst other places of interest, the Ural Mountains, with similar results, which were duly recorded in his "Asie Centrale." He died at Potsdam, shortly after hearing of the death of Bonpland, May 6th, 1859, within a few months of his 90th year.

The following were included amongst the twelve magnificent volumes on America, published by Baron Humboldt, between the years 1805 and 1820.

1. Voyage aux Regions Equinoxales du Nouveau Continent, pendant les années, 1799-1804.
2. Atlas Geographique et Physique du Nouveau Continent.
3. Recueil d' observations Astronomiques, et de Mesures exècutèes dans le Nouveau Continent.
4. Tableau Physique des Régions Equinoxales.

See, also the Personal Narrative Recueil d'observations &c, redige par J. Oltmanns, 1809.

LIEUTENANT JAMES GRANT R.N.

1800-02

The voyage of discovery of this officer, apparently undertaken with less than the usual amount of high patronage, has, in consequence, been greatly overlooked: it was singular in more respects than one. Captain Schank R.N., seems to have been in about the year 1800, a strong advocate for building small vessels, in watertight compartments, and with sliding keels or centre-boards. Under his direction, the *Lady Nelson*, of 60 tons, was ordered to be so fitted, and the ultimate service allotted to her, was that of exploring the sea limits of the territory of New South Wales. A survey of the coast we are told was intended, with a journal of all occurrences, natural history, nature of soil, &c. The *Lady Nelson* had been converted from a cutter to a brig, and provided with three centre-boards. Lieutenant Grant, who

* After many years persecution at the hands of Dr. Francis, Bonpland died at San Borgia, in Brazil, aged 86 years.

evidently from the narrative he afterwards published, had great faith in what was at that time looked upon as a decided innovation in the art of shipbuilding, was appointed to the command, and sailed from Portsmouth, March 17th, 1800. Many unpleasant criticisms were bestowed, and comments of a discouraging nature ventured, upon the notion, of a small vessel, of such novel construction, undertaking so long and hazardous a voyage. The general appellation assigned to the craft before quitting England was that of H.M.S. *Tinder-box*. It was with difficulty Lieutenant Grant kept his crew on board, mainly on account of these disparagements.

The *Lady Nelson* duly arrived at Porto Praya, and the Cape of Good Hope, where she was for some time detained.

On the 7th of October, leaving Simons bay, the commander had such faith in his vessel, that he chose what was considered a high latitude for the run to Australia, reaching Sydney after a passage of 71 days, having reached as far south as forty nine degrees, fourty four minutes, and being the first vessel from Europe to sail through Bass's strait, discovered a short time previously by Dr. Bass the surgeon of the *Reliance*. At Sydney, the *Lady Nelson* was paid off, and Lieutenant Grant appointed to the command of the armed ship *Supply*: but that vessel proving unseaworthy, he again resumed his first charge, and on March 6th, 1801, left Sydney with the *Bee* (a decked launch) as tender, under orders from the governor, Captain P. G. King R.N., to make a thorough examination of Bass's strait. The *Bee* failing as a sea-boat, soon returned to Sydney, and the *Lady Nelson* continued alone.

Mr. Cayley, a botanist, who had been sent out from England by Sir Joseph Banks, accompanied Lieutenant Grant, who also had with him, Mr. J. Murray, a mate R.N., who subsequently commanded the *Lady Nelson* when the discovery of Port Phillip was made, and also when as a tender, that vessel was employed under Commander Flinders in the *Investigator*. Ensign Bareillier the surveyor of the colony made one of the expedition. Jervis bay was examined, and many interesting observations recorded as to the natives, their habits &c. Continuing to the southward, the northern coast of Bass's strait was explored, from Wilson's promontory to Western point, a distance of 70 miles; after which, Botany Bay, to the southward of Sydney, was returned to. Having taken on board Lieutenant Governor Colonel Paterson (after whom the river Paterson was called), in company with the schooner *Frances*, the Hunter river was explored, and coal being found in considerable quantity, the *Frances* shortly afterwards sailed for Sydney with forty tons of that commodity on board. Mr. Lewin a draughtsman now joined the party, and proved of material assistance, in illustrating the surveys made, of the Hunter river and port Stephens. The *Lady Nelson* returned to Sydney July 25th, 1801, and Lieutenant Grant sailed November 9th, of the same year in the brig *Anna Josepha*, laden with coal and timber, by way of Cape Horn and Falkland islands, for the Cape of Good Hope. After a wild passage, during which, the crazy vessel was becalmed for six weeks in the vicinity of Tristan d'Acunha, Table bay was arrived at April 1st, 1802, and shortly afterwards Lieutenant Grant embarked for England in H.M.S. *Imperieuse*. The first coal brought from Australia in the *Anna Josepha*, realised 36 rix dollars a ton, at the Cape.

Of the newly discovered places, head-lands, and islands, examined by Grant during this voyage, but few have retained the names he assigned to them; of these, however, are Jervis bay, Cape Otway, Marsh's islands, Seal islands and Snapper island.

A chart of the North and West parts of Bass's Strait and South Coast of Australia appears in the published account of this voyage, and an engraving of the *Lady Nelson* in the river Thames before starting, is a curiosity in itself. That no lives were lost, nor even a spar strained throughout, says much in favour of the accuracy of Lieutenant Grant's judgment in bestowing the confidence he did in the *Lady Nelson*, and the peculiar style of her build.

See, Narrative of a voyage of Discovery, in H.M.S. *Lady Nelson*, of 60 tons, with sliding keels, in the years 1800, 1801, 1802, to New South Wales, by James Grant, Lieutenant R.N.

CAPTAIN N. BAUDIN (French)

1800-1804.

The corvettes *Geographe* and *Naturaliste*, under Captain's N. Baudin and Hamelin, were dispatched by Napoleon from Havre, October 19th, 1800, to complete the discovery of the south and west coasts of Terra Australis. Men eminent in every branch of science were attached to this expedition. Peron the naturalist wrote a narrative of the voyage, in which, however, he does not once mention the name of the Commander, and an account was also compiled by Lieutenant L. Freycinet.

Having sighted the Cape of Good Hope, and encountered a violent hurricane near Madagascar, Mauritius was arrived at March 15th, 1801. Here the ships were re-equipped and many of the scientific civilian staff attached to the expedition, at their own request, permitted to remain.

April 25th, the voyage was continued, the first Australian land made, being that in the neighbourhood of what was termed Cape Naturaliste, and Geographe bay anchored in June 8th.

Compelled to quit this bay, in the night, by a violent gale, the ships parted company, the *Geographe* finding her way to Bernier island, where a running survey was commenced, and the position of the N.W. point of Australia determined, as well as of various islands including the Lacipede; Cassini island was anchored off August 14th, from whence course was shaped for Coepang of Timor.

The *Naturaliste* in the meanwhile examined the Swan river (which was ascended for about 60 miles), Gantheaume bay, and the Abrolhos, and then followed her consort to Coepang.

November 13th, the *Naturaliste* continued her explorations, and having searched for the Trial islands, and rounded the south Cape of Tasmania, arrived at the entrance of D'Entrecasteaux channel; there discovering a new port. Leaving this February 17th, 1802, Oyster bay of Maria island was visited. H.M.S. *Investigator* under Commander Flinders was fallen in with in Encounter bay, in lat. 35° 40′ S., long 138° 58′ E., which was consequently made the position of the limit of the discoveries on this coast made by the respective Commanders.

To the extensive line of coast from Nuyts [illegible] to Bass's strait the designation of Terre Napoleon was given; and Spencer and St. Vincent gulfs were named respectively Golfe Bonaparte and Josephine. In the same manner, many of the islands and capes received a French denomination, * such as Decrès, Vauban, Berthier, Catinat, Laplace Jerôme, St. Pierre and St. Francis islands. May 28th, 1802, course was again shaped for Tasmania, Adventure bay being anchored in twelve days afterwards.

By June 4th, the crew of the *Naturaliste*, which had long suffered from the inroads of scurvy, had only 4 sailors available, and in consequence, having previously parted company with the *Geographe*, Captain Hamelin sailed for Port Jackson, where he arrived June 28th. Here the *Georgaphe* was found, and Captain Baudin now resolved to send the *Naturaliste* to France, with the hydrographic and other results of the expedition. She accordingly sailed November 18th, 1802, arriving at Havre June 7th, 1803, after an absence of 2 years and 7 months.

The *Casuarina* (named after the tree), a small craft only 20 feet in length, was purchased at Port Jackson, and the command given to Lieutenant L. Freycinet, who had so far served in this expedition as first Lieutenant of the *Naturaliste*. In company with that vessel, the *Casuarina* sailed as far as Bass's strait, explored Hunter island, and surveyed King island. Quitting Bass's strait, having now been joined by the *Geographe*, Freycinet discovered that La Caille and Chappe islands formed a part of Laplace islands; h[illegible] then

* The nomenclature of Captain Baudin, during this voyage, has not altogether been adhered to in modern charts, priority of discovery, in some cases, resting with contemporaneous navigators.

sailed for the western extremity of Nuyts land, and having completed these investigations arrived at King George Sound, February 11th, 1803.

The *Geographe* examined the coast of Murat bay, Tourville river &c. and returned to the same destination as Freycinet, February 18th.

March 6th, operations were renewed, the *Casuarina* examining the coast near cape Leeuwin, meeting the *Geographe* at Rottnest island, and continuing to Witt Land, Montebello islands, and Dampier archipelago; thence to the Lacipede islands (the resort of Dampier in 1688) and Cassini island.

Between the dates of June 3rd and 26th, the vessels re-visited the west coast of Australia, where many of the crew overcome with their exertions, became seriously ill, and the astronomer, Mr. Bernier, died.

Returning to Mauritius, August 7th, 1803, the results of the expedition were forwarded to the French government, and the *Casuarina* disposed of. Here, on September 16th, Captain Baudin who had long been ailing, died, and was buried with full naval funeral honours.

The *Geographe* with the remnant of the officers and men forming the expedition, sailed for France, December 16th, arriving at Isle de Groix, 24th of March, 1804, after an absence of nearly 3½ years.

See—Voyage de Découvertes aux Terres Australes pendant les années 1800, 1801. 4*to* *Paris*, 1815.
Also, Atlas containing 11 sheets of charts and plans.

CAPTAIN PETER HEYWOOD, R.N.

1800-12.

The above officer born in 1772, was a son of the Deemster of the Isle of Man, and Seneschal to the Duke of Athol. He sailed in the *Bounty* under Bligh in 1787, and as it is hardly necessary to state here, was tried and pardoned in 1792, on the charge of having taken part in the mutiny off Tofoa, on the 28th April, 1789.

He rejoined the Navy in May 1793, in the *Bellerophon*, Commodore Pasley (his uncle), and from her removed to the *Niger*, and afterwards to the *Queen Charlotte*, bearing the flag of Lord Howe.

In 1794, he received an acting order as Lieutenant to the *Robust*, to the *Incendiary* (flag-ship) March 1795, and *Nymphe*, Captain George Murray. He then served in the *Fox* in the North Sea, and continuing in that vessel to the East Indies, as senior Lieutenant, was appointed to the *Suffolk* on the same station. In August 1800, he was promoted to the command of the *Vulcan* bomb, and between 1800 and 1803, commanded in turn the *Trincomalee*, *Trident*, *Leopard*, and *Dedaigneuse*. He was posted April 5th, 1803, and in that year made a survey of the Typa. In January 1805, owing to ill-health he was allowed to return to England.

While commanding the *Leopard*, he surveyed the East coast of Ceylon, and more especially the shoals off the north part of that island, and the whole extent between them and point Calymere, then utterly unknown. He also ascertained the position of many places on the Indian coast and of the different islands to the eastward, which enabled him to render material assistance to Horsburgh in the compilation of the East Indian Directory.

In October 1806, he was appointed flag Captain of the *Polyphemus* on a secret and important expedition to the Cape of Good Hope, and River Plate—he then joined the *Donegal*, and in May 1809, the *Nereus*, in which he served on the channel and Mediterranean stations. He returned to England with the remains of Vice Admiral Lord Collingwood in April 1810. Afterwards returning to South America, he surveyed the mouth of the river Plate, which survey, was afterwards added to and corrected by Commander H. Foster of the *Chanticleer*: in July 1813, he returned to England in command of the *Montagu*, and upon arrival was sent to the North Sea. In the following year, when Napoleon Bonaparte returned from Elba, Captain Heywood was ordered to join the squadron in the Mediterranean under Lord Exmouth, for special secret service.

In 1815, he carried on the port duties and those of senior office at Gibraltar until

February 1816. Upon paying off the *Montagu* in July 1816, Captain Heywood received a tribute of respect and esteem from his crew which took the quaint shape of a poem of five verses termed "The Seaman's Farewell" to H.M.S. *Montagu*. The following is extracted therefrom,

"Farewell to thee, Heywood! a trier one never
"Exercised rule o'er the sons of the wave;
"The seaman who served thee, would serve thee for ever,
"Who sway'd, but ne'er fetter'd, the hearts of the brave

After the *Montagu*, Captain Heywood was not again employed afloat, having served actively for upwards of 27 years, out of a period of 29. He reached nearly the top of the list of Captains and died about the year 1831,* leaving behind him a high character in the Navy, of which he was a most honourable and distinguished member.

It has been stated on excellent authority, that in 1828, upon the resignation of Sir Edward Parry, he was offered, but declined, the post of Hydrographer, which was then offered to and accepted by Captain (afterwards Sir) Francis Beaufort—this would also appear to stamp him as having been a highly scientific and intelligent officer.

Some of the charts produced under Captain Heywood's directions were,

Channel between Mindanao and Bassilan with track of H.M.S. *Fox*.
Anchorage of Pooloo Samwai—north coast of Sumatra.
Point Pavay and soundings. Pollock bay, Mindanao.
Back bay. Trincomalee. Entrance of Mergui river.

Remarks on, and Instructions for navigating the River Plate. *Mss.* 1813.

He also wrote a vocabulary of the languages of Tahiti and New Zealand, which proved highly serviceable to the first missionaries that visited those islands.

DON CIRIACO DE CEVALLOS, (Spanish).

1802.

This officer sailed from Cadiz in 1802, to examine minutely the coast of New Spain, from point Delgada to Cape Catoche and Cozumel island. He also made a chart of the peninsula of Yucatan, Bay of Campeche, and took several soundings. Part of his work was lost in the war.

LIEUTENANT JOHN MURRAY.

1802-08.

The above officer assisted Captain Flinders in the surveys made in the *Investigator* upon the eastern coast of Australia; returning to Port Jackson before him in the tender *Lady Nelson*, he discovered and named Port Phillip, after the first governor of New South Wales.

After returning to England, his name is found as the maritime surveyor of several parts of the home coasts; amongst his charts were,

The coast of Sussex, Winchelsea to E. end of Owers 1804. Newhaven 1805, New Shoreham to Selsea bill 1807. Track of the *Lady Nelson* along E. C. of Australia in company with *Investigator*, 1802. Port Phillip, 1802. Part of E. coast of New South Wales, with tracks of Captain Cook and Furneaux.

CAPTAIN WILLIAM D'URBAN, R.N. D.C.L.

1802-10

This officer having been educated under the well known mathematician Mr. J. Dalby who was employed with Colonel Mudge in the great trigonometrical survey, became particularly useful to Admiral Elliot, both in making and calculating observations, when that officer did so much to bring lunar observations into general practice at sea. The effect of his services in this respect was, that at Admiral Elliot's request, Lord Howe promoted him

* A Memoir of Captain Peter Heywood's life with a portrait, by W. Tagart, was published by Effingham Wilson, 1832.

to Lieutenant's rank. After various services, during an appointment held by him in command of the *Weazle*, employed on the Jersey station, he performed an essential service, by establishing marks for the inner channels along the French coast between St. Malo and Brest, for which he received the thanks of the Admiralty. He was then, until 1810, almost uninterruptedly employed in diplomatic and other services in the Mediterranean.

In that year Mr. Arrowsmith published charts of the dangers in the channel between Sardinia, Sicily, and Africa, from the original surveys of Captain D'Urban; (1) of the Esquirques (Skerki) shoals; (2) Keiths reef and shoal, of volcanic production named by him after his friend the Viscount; (3) survey of all the dangers on the N.W. coast of Sicily, between Trapani and Marsala, with the adjacent islands and channels ot Favignani, Formiche, the rocks of Porcelli &c.

The positions of the dangers here enumerated were determined by Captain D'Urban from the mean result of six chronometers; the soundings were taken in boats, and carefully laid down by angles, taken from and to, vessels anchored on the shoals.

He died at Warminster, aged 65 years, having arrived at a Rear Admiral's rank.

ADMIRAL ADAM JOHN DE KRUSENSTERN, (Russian)

1803-06

Born November 8th, 1770, in Esthonia. Krusenstern was educated at the Cathedral Church, Revel. In January 1785, he entered the corps of Naval Cadets established at Cronstadt. In May 1778, he became Midshipman of the Matisloff, 74 guns, Captain Maloffsky, who it was intended should command a squadron of five Russian ships for a voyage round the world, but war breaking out with Sweden, this project was postponed. In 1789, the *Matisloff* having taken a conspicious part in the action in Viborg bay against the Swedish squadron, to Krusenstern was allotted the honourable service of bringing on board the flag of the Swedish Admiral, Cynanker. Peace being afterwards concluded, in 1793, Krusenstern was selected as one of twelve Russian officers to serve on board the English fleet, joining H.M.S. *Thetis*, under Captains Cochrane and Murray, at that time employed upon the North American Station. This frigate having sustained damage from grounding, Krusenstern took passage in a merchant craft to the West Indies, where he visited Barbadoes, Surinam and the Bermudas. In 1796, he returned to England in the *Cleopatra*, Captain Penrose.

Occupied with the thought of opening up Russian trade on the way to India, he succeeded, not without difficulty, in getting with two companions Baskakow and Lisianisky on board the ship-of-the-line *Raisonable* bound for the Cape of Good Hope. Finding at the Cape the frigate *l'Oiseau* bound to the East Indies, he sailed for Madras and Calcutta, where upon being hove down for repair, it was found, that having got ashore on a previous occasion, a large piece of rock had pierced the ships bottom, and become fixed there in a miraculous manner. After cruising in another English frigate in the Bay of Bengal, Krusenstern left the *Oiseau* at Malacca and after a severe illness, embarked in a small craft for Hong Kong where he remained for a part of the years 1798, 1799. Returning to England in an East Indiaman in the course of the latter year, and hastening to Russia, he laid before the Minister of the Navy the results of his observations abroad, and proffered a scheme for forming a Russian trade to China round Cape Horn, the return voyage, laden with Chinese commodities, to be accomplished round the Cape of Good Hope. For some time however, little notice appears to have been taken of his suggestions. In August 1803, the two ships *Nedeska* and *Neva* commanded by Captain Krusenstern, and sailed from Cronstadt visited and partly surveyed Teneriffe, Cape Verds, Ascension, St. Catherine I., Staten island, Cape Horn, Mendoza or Washington island, Nukahiva, Port Anna Maria, Sandwich islands, Kamschatka, Nagasaki, Goto islands, Saghalin · searched for Guadaloupe, Malabriga and Don Juan: Sulphur island, Formosa, Macao, Pulo Aor, Gaspar strait, Sunda strait, Christmas island, Cape of Good Hope.

By this expedition, the hydrography of the Southern Seas was greatly improved, and

the non-existence of several islands clearly demonstrated. Positions of a great extent of the coasts of Japan, Yesso, and Saghalin, as well as of the northern Kurile islands, and longitude of Nagasaki were ascertained. For this voyage Krusenstern was promoted to Captain of the second rank, and himself compiled at his country residence in Esthonia, the narrative, which was published in German at St. Petersburgh 1810-12; in Russian in 1809-13; translated into English by Hopner (1813), into French by Eyrees (1821), also, into Dutch, Swedish, and Italian,

In 1811, Krusenstern was named Inspector of Naval Cadets. It was by his influence that the Chancellor, Count Romanzoff, fitted out the scientific expedition in the *Rurick* under Lieutenant Kotzebue for Behring's strait, the plan and instructions of the voyage being drawn up by him. In 1814, he visited the principal English ports. After returning to Revel his health again became indifferent, and he then produced the second volume of his voyage, together with charts of the South Seas. Many new positions were herein published for the first time, Krusenstern having examined with great care the manuscript collections of the Admiralty, bringing to light much that had been before hidden. From 1822-26, he resided in the Russian capital as a member of many scientific committees. In 1826, on the accession of the Emperor Nicholas, he was nominated Director ot the corps of Naval Cadets, which he held to the end of 1842. Krusenstern rose in the regular way by seniority to the rank of rear, vice, and full Admiral.

The fiftieth anniversary of his entry into the Russian Navy was celebrated by a great festival, which the Emperor himself honoured with his presence, and which was made known all over Europe.

In 1842, Krusenstern asked for leave to retire from his post as administrator of the corps of cadets. The Emperor in reply, conceded his wish, at the same time appointing him to a high position on his personal staff. After a long illness, he died on the 24th August 1846, in the seventy sixth year of his age.

He had been decorated with the orders of the Russian Empire up to that of Alexander Newsky, the insignia of which, set in diamonds, were conferred on him on the occasion of the fiftieth anniversary referred to.

He was Honorary member of the Imperial Academy of Sciences at St. Petersburgh, Honorary member of philosophy of the University at Dorpat, corresponding member of the Institute of France, and of the Royal and Royal Geographical Societies of London, also, of the Royal Society at Gottingen, and several scientific societies of Russia, Knight of the Prussian order of merit, and member of most of the scientific Associations of Europe.

Krusenstern it is believed, saw that the welfare of Russia and Great Britain were not inconsistent or antagonistic, but in fact identical. He had too lofty an order of intellect to partake in those small prejudices of race or political illusions, which, at the commencement of his career, were professed by many of his contemporaries.

The Pacific Atlas of Admiral Krusenstern contained 34 charts and plans, and may be taken as an example of the extraordinary labour and perseverance of the author, as well as of his superior talents as a navigator and astronomer. None of his statements have ever been called in question; while his discoveries and nautical corrections are universally acknowledged to have been of infinite service to navigation. *

Among Krusenstern's published works were the following,

1. Account of his voyage round the world (104 maps)

2. Vocabulary of languages of easternmost Asia and North West America *St. Petersburgh*, 1813; *4to, in German.*

(3). Memoire sur un Carte du détroit de la Sonde, et de la rade de Batavia—*St. Petersburgh*, 1813; *4to.*

(4). A Justification of Lord Cochrane—*Berlin*, 1817; *8vo. in German.*

(5). Remarks on Hydrography of the Great Ocean. *Leipsig*, 1812; *folio with chart, German.*

* Memoir of Admiral Krusenstern, translated from the German by his daughter Madame Charlotte Bernhardi, and edited by Rear Admiral Sir John Ross. 8vo. 1856.

(6). Atlas de l'ocean Pacifique. 1823-26—folio, 34 charts.

(7). Receuil de Memoires Hydrographique pour servir d'analyse et d'explication a l'Atlas de l'ocean Pacifique. *St. Petersburgh*, 1824-27. *4to. in French and Russian.*

(8). Supplement to (7). *St. Petersburgh.* 1835; *4to. French and Russian.*

Independently of these works, Krusenstern wrote about 26 Essays and Memoirs, many of which appeared in other publications, notably in Kotzebue's voyage to the South Sea, in the Magazine of Natural Sciences on Maldonado's and Malespinas voyages; on the Caroline islands; in the Geographical Ephemerides on the existence of Davis land &c.

CAPTAIN UREY LISIANSKY, (Russian).

1803-1806

The above officer was born of noble parents 2nd of April 1773, and studied at the Marine Academy at Cronstadt for the naval professon between the ages of ten and fifteen.

In 1788, he was made a midshipman in the Russian Navy and served in the Baltic throughout the Swedish war. In 1793, he was made a lieutenant, and in 1794, selected to serve in the British Navy, sailing in the frigate l'Oiseau, Captain Murray for the North American Station, and after travelling for some time in the United States joined respectively the *Topaze* and *Cleopatra*, in the latter of which he returned to England.

In 1797, he joined the *Raisonable*, in which he sailed to the Cape, and then removed to the *Sceptre* on the East Indian Station.

In 1800, Lisiansky returned to Russia, and in 1802, when the expedition commanded by Captain Krusenstern was planned, he bought and equipped both ships in England, and was appointed to the command of the second ship (the *Neva*).

From the different destinations of the two vessels on their arrival in the Pacific Ocean, and from their frequent and unavoidable separation, it fell to Lisiansky's lot to visit alone, Easter, and the Sandwich islands, to pass more than a whole year on the island of Cadiack and at Sitka or Norfolk Sound, and to discover Lisiansky island, and Krusenstern bank to the north west of the Sandwich islands.

On the return of the expedition to Cronstadt, in 1806, a separate account of the voyage of each vessel, with an atlas of charts and engravings, was ordered to be printed at the expense of the emperor, which were afterwards translated into English.

In 1807, he commanded a squadron in the Baltic, and in 1809, when Captain of a 74 gun ship was compelled from debility to retire from the Russian Naval service.

See, A voyage round the World in the years 1803-1806, by order of the Emperor of Russia in the ship *Neva* by Urey Lisiansky, Captain &c. *4to*, London, 1814.

In the appendix are vocabularies of the languages of Nukahiva, the Sandwich islands, Sitka sound and North West America. Charts are published with the work of

St. Catherine Harbour (Easter I).
Washington Islands (Marquesas).
Lisiansky Island (N. W. Pacific).
St. Paul Harbour. (N. W. America).
Cadiack Island. (N. W. America).
New Archangel. (N. W. America).

CAPTAIN COURT, H.E.I.C.N.

1804-23.

This officer's name will always be connected with the first reliable survey of the Red Sea. In 1795, Lieutenant Court navigated the *Panther* up to the north part of the gulf of Suez.

After the disagreement which took place between Lord Valentia and Captain Keys of the *Antelope*, in the first expedition which took place to explore the western coasts of the sea in question, Captain Court was chosen for his high character as a sailor and man of science to carry out the same service that was expected of Captain Keys. December 4th 1804, the *Panther* under his command, having Lord Valentia on board as ambassador, with the *Assaye* under Lieutenant Maxfield, sailed from Bombay.

They surveyed part of the Dhalac Islands, Annesley bay, and Valentia Island, and the

coast for some distance to the north of Musawwa. The embassy was a success.

In November 1805, the whole party sailed from Musawwa and reached Suez in the end of January 1806.

Lord Valentia agreed perfectly with the Commanders of the expedition and much useful work was accomplished.

The results of the surveys of Captain Court were given in a chart of the Red Sea published with Lord Valentia's travels. Lieutenant Maxfield also made a chart of Musawwa and part of the Abyssinian coast, assisted by Messrs Crawford and Hurst, midshipman. On his return to Calcutta, Captain Court was appointed Marine Surveyor General, a post which he held until his death in 1823. Under him worked Daniel Ross, Maughan, Maxfield, Knox, and Lloyd,—while at about the same period James Horsburgh's name became connected with the Marine Surveys of India.

See—Voyages and travels to India, Ceylon, the Red Sea, Abyssinia, and Egypt in 1802-6, by George, Viscount Valentia. 3 *Vols. London* 1809.

CAPTAIN DANIEL ROSS, H.E.I.C.S.

1807-40.

The above well known hydrographer of the Indian Navy, and founder of the Bombay Geographical Society, surveyed part of the coast of China 1807, Paracels, with part of Cochin China, coast of Palawan 1810, strait of Malacca 1819, coast of Tenasserim, Mergui Archipelago, Saya de Malha bank, and Rangoon 1825. Many of these surveys were made in conjunction with Lieutenant Maughan.

His charts were published as they were completed, and the whole were incorporated into a general chart by Captain Horsburgh.

Admiral Collinson, when surveying in China, had opportunities of testing several of the charts drawn from surveys of officers of the Bombay Marine, and he bears testimony to the accuracy of their work.

On the death of Captain Court in 1823, he was succeeded at Calcutta, as Marine Surveyor General by Captain Ross, "The Father of the Indian Surveys" as he was called. He indeed first introduced a scientific method.

During the Burmese war from 1823 to 1826, the surveying operations under his superintendence were interrupted, but he had the *Research* (300 tons), and *Investigator* (450 tons), at work in the Mergui archipelago. The *Research* was given up to Captain Dillon to go in search of *La Perouse*, but the *Freak* was substituted, and in her, surveys were made of the Martaban coast.

In 1828, Lord William Bentinck ordered the surveying establishment to be broken up But stout old Daniel Ross was urgent and importunate in advocating a resumption of the good work: and in 1830, he again had two brigs, the *Flora* and *Sophia*, in the Mergui archipelago, under his assistant Lieutenant Lloyd, while he himself examined the coast of Arakan.

Captain Ross did his work with great care and regard for scientific accuracy, and it was all carried out on a trigonometrical basis. His triangulation was often verified by astronomical observations.

In Ross's time, the Government of India used to strike off a few copies of his charts at Calcutta by lithography, and send the originals to the India House for engraving and publication.

Between the years 1828 and 40, during the survey of the coasts of Arabia and Persia with the old Persian gulf survey by Captain Brucks, Captain Ross gave the benefit of his superintendence, and afterwards, under his direction, these, and other Indian Maritime Surveying officers, carried on a fine series of hydrographic operations, extending from the mouths of the Hoogly to the strait of Malacca.

Captain Daniel Ross resigned his appointment as Marine Surveyor General in

November, 1833, and was succeeded by his able assistant Lieutenant Lloyd. He retired to Bombay, where he became Master Attendant, as well as President of the Bombay Geographical Society, from 1839 until just before his death.

The charts constructed from the surveys of Captain Daniel Ross are far too numerous for mention here, but the following are quoted as typical of the wide scope of his labours.

See, Memoir of the Indian Surveys *2nd Edition*, 1878.

Amphitrite islands.
Paracel islands.
Singapore harbour and road.
Durian and Rhio straits.
Chittagong, Kyouk, Phyou, Ramree.
Negrais, Rangoon, Martaban.
Tavoy and Mergui.
Hastings harbour.
Tiben-pien Harbour.
Hui-ling-sun harbour.
Namo harbour.
Canton river, Lantao to Lankeet islands.

CAPTAIN THOMAS HURD, R.N.
Hydrographer, 1808-1823.

CHAPTER III.

De Ferrer, Thomas, De Mayne, Franzini, Martin White, Smyth, Holbrook, Hewett, W. Owen, Kotzebue, Lockwood, Tuckey, Maxwell, Gauttier, Bayfield, Freycinet, King, John Ross, Franklin, Fitzmaurice, Roussin, Dessiou, Heli, Bellingshausen, Scoresby, Basil Hall, Brucks, L'Artigue, Vidal, Tiarks, Weddell, Duperrey, F. Bullock.

Born in about the year 1753, previous to the first American war, this officer assisted in the survey of parts of Newfoundland, Nova Scotia &c., under Colonel des Barres and Major Holland, and afterwards completed his time as a midshipman on board the flag-ships of Admiral Gambier and Earl Howe, by the latter of whom, he was made a lieutenant into the *Unicorn* frigate, Captain J. Ford, 1777.

The *Unicorn* being coppered, was enabled to capture an unusually large number of American privateers and merchantmen, and Lieutenant Hurd, in consequence, realized a considerable sum, as had been predicted by the above nobleman, who, on presenting him with a lieutenants commission, had jocosely advised the purchase of an iron chest in which to secure his prize money.* In May 1779, the *Unicorn* formed part of the squadron under Sir James Wallace, at the Capture of *La Danae*, and the destruction of several other national vessels, in Cancale bay, on the coast of France.

Lieutenant Hurd commanded the main deck guns of the *Hercules* on the glorious 12th of April 1782.

He was subsequently removed to the *Ardent*, re-captured from the French on that memorable occasion, and afterwards attached to the ill-fated convoy that sailed from Jamaica under Rear Admiral Graves, which suffered so dreadfully in the hurricane of Sept. 17th 1782.

During the ensuing peace he was employed on various services; and it is to his exertions that the first reliable chart of Bermuda is due. The geographical situation of that island, as well as that of its many detached banks and reefs, were determined by him with great exactness. He afterwards commanded the *Lily*, sloop of war, and in the summer of 1804, was engaged in a survey off Brest, the result of which was the production of an admirable chart. Appointed one of the members of the committee to inquire into the proposed extension of the Hydrographic Department in 1808, he succeeded Mr. Alexander Dalrymple as hydrographer at the latter end of May of the same year.

He appears to have determined from the first, to view the position he had been selected for, as well as that of the Surveying service of the future, as much as possible from a naval point of view. Sufficiently practical for the task, untrammelled by attachment to such scientific societies as at that time existed, how well he succeeded during the fifteen years remaining to him of life, the next few pages will tell. He was favoured moreover by the fact, that the war with France, had brought home to the minds of England's naval authorities, the priceless value of trustworthy charts,

* The experiment of coppering ship's bottoms although recommended in 1708, was first tried in the *Alarm* frigate in 1761; the *Dolphin* of Byron's squadron was also coppered in 1764, but the plan was not generally adopted until many years afterwards.

It would not seem to have been at first contemplated, when the Hydrographic Department was established in 1795, to connect it with the Naval Service afloat, or to do more than utilize the documents which already existed, or which might hereafter find their way to it, and together with these and the purchase of such as might be in the hands of private individuals, to construct charts for issue to the ships of the Royal Navy, yet; as several explorations or surveys both of our own and foreign coasts, had been undertaken before the Department had been formed, it could scarcely but have been foreseen, that such an amalgamation would sooner or later take place.

Up to 1804, private individuals had been in the employ of the Admiralty as Surveyors, such as Professor Mackenzie and Graeme Spence, yet the connection between them and the Board was ill-defined and unsatisfactory. They were under an obligation to deposit their original surveys at the Admiralty, and were supposed to do so, but at the same time were allowed to publish for their own benefit.

Most of the surveyors accordingly disposed of the copyright of their works to private publishers, which, at a later date were re-purchased by the Admiralty, when the Board commenced to publish their own charts for the Navy.

Dalrymple appears to have turned his attention more to collecting and digesting than issuing charts to the fleet. It must be remembered however, that he was not a Naval officer, but an ex-Indian official, with a great talent for nautical surveying and geographical research, and appears to have preferred to risk blame for lack of immediate show, rather than be held responsible for the issue of charts that were incomplete and inaccurate.

Upon the accession of Captain Hurd to the post of hydrographer, some additions were made to the staff, and the status of the department as regards pay and position was slightly improved.

One of his first acts was to extend the yearly holidays to the King's birthday and Good Friday, although at this time, owing to the war, the energies of all were severely taxed: the draughtsmen working early and late, Sundays included, preparing manuscript charts for various expeditions ordered at short notice.

A year or two after Dalrymple's retirement, Captain Horsburgh with the assistance of Mr. John Walker published his East India works which were adopted for the Navy as well as by the East India Company.

About this time also, Captain Hurd succeeded in bringing about the issue of a regular supply of charts for each station, either published by the Admiralty or purchased from private firms, and he appears to have directed his special attention to the department becoming independent of all supplies from without, and in this he was greatly aided by the acquisition at Dalrymple's death, of the 130 copper plates forming his private stock.

In 1810, the surveying service and the Hydrographic Department became practically united under the control and supervision of one head, acting under the direction of the Board, and although there occurred breaks to the smooth working of this arrangement under successive Boards, this has been continued up to the present day.

Commander Flinders who had been employed in a surveying capacity in Australia since 1801, at the time of Captain Hurd's accession, was a prisoner at Mauritius; he was released in 1810. In that year, also, Mr. George Thomas, a master R.N., was selected to carry on the survey of the Dutch coast in the *Investigator*.

Mr. Anthony De Mayne, while master of H.M.S. *Amelia*, had surveyed the west coast of Africa between Cape Palmas and Cape Formosa, he was afterwards similarly employed in the West Indies.

In 1811, Commander F. Beaufort in H.M.S. *Frederickstein* commenced the survey of the coast of Karamania, being promised his promotion when that work was completed. *

In 1812, Commander Martin White was employed in H.M.S. *Fox*, surveying, the English

* Captain Beaufort completed this survey in 1813, during its execution he was dangerously wounded by a fanatical Turk.

channel; this work was for a time discontinued owing to the war, but resumed in 1818, in H.M.S. *Shamrock*.

In 1813, Lieutenant W. H Smyth was attached to the Sicilian flotilla of gunboats under Sir Robert Hall in the Mediterranean, for the purpose of making surveys for the Admiralty. As far back as 1796, 97, this officer had forwarded charts of parts of the East Indies made by him, but their authorship does not appear to have been made clearly known until March 1813; for, on learning from whom they had emanated, the Board promoted Mr. Smyth to Lieutenant's rank. In 1815, he was made a commander, and in 1816, H.M. sloop *Aid* was sent out for him to carry on his work in.

In 1813, also, the apartments in the Admiralty building occupied by the Department were considerably extended. The *personel* at this time consisted of seven members:—Captain Hurd, hydrographer; Mr. John Walker, assistant hydrographer; Mr. Michael Walker and three others, draughtsmen; and Mr. William Nares, clerk.

In 1814, two surveying vessels appear on the official Navy List, the *Investigator* under Mr. George Thomas, and the *Sydney* employed on the coast of Newfoundland, under Mr. George Holbrook, both masters R.N.

In 1815, Lieutenant William Hewett of the *Inconstant*, forwarded plans of parts of the Brazilian coast, and offered his services as a marine surveyor, which appear to have been encouragingly received by Captain Hurd "in the event of the Admiralty appointing certain officers to carry out certain scientific services"; the latter was also of opinion, "that by no means should an officer be employed in the surveying service who could not produce a satisfactory certificate of his fitness, and that if possible, surveying officers should become a separate corps, apart from any military considerations as to relative rank." In this year Captain W. F. W. Owen commenced the survey of the Canadian Lakes, which, in the ensuing season he left Lieutenant Bayfield to continue, returning himself to England.

In the spring of 1816, Mr. Anthony Lockwood master R.N., doing duty as acting Master Attendant at Barbados was appointed by Sir Alexander Cochrane to make surveys of part of Nova Scotia. This was the year too, which saw the departure of the ill-fated Congo expedition under Captain Tuckey, and of the China mission of Lord Amherst in the *Alceste* and *Lyra*, under Captain's Maxwell and Basil Hall, the latter of which contributed largely to the hydrography of the coasts of the Corea and northern China.

On the 7th of January 1817, surveying pay was established for naval officers as follows—for Captains and Commanders £1 a day—for Lieutenants and Masters 15s. a day—for officers specially employed as Assistant Surveyors 5s. a day.

In 1818, the following surveyors were employed by the Admiralty

Lieut. P. P. King	... *Mermaid*	...	West Australia.
Mr. George Thomas	... *Investigator*	...	Thames entrance.
Mr. Lewis Fitzmaurice	... *Congo*	...	East coast of England.
Lieut. W. Hewett	... *Protector*	...	Norfolk and Lincoln coasts.
Commander W.H.Smyth	... *Aid*	...	Coast of Sicily.
Mr. George Holbrook	... *Sydney*	...	Newfoundland.
Mr. A. De Mayne	... *Landrail*	...	West Indies.
Commander M. White	... *Shamrock*	...	Channel Islands.
Lieut. H. W. Bayfield	... *Hired boats*	...	Canadian Lakes.

Large additions were made to the stock of Admiralty plates by purchase from private publishers about this time, and the Hydrographic Office becoming better known by, and blended with the surveying service afloat, commenced to assume a more important aspect.

In 1819, Captain Bartholomew C.B. in the *Leven* contributed certain charts of places visited in the North Atlantic, which were duly presented to the Board. In 1820, Captain Basil Hall in H.M.S. *Conway*, made a scientific voyage to the Pacific to swing the pendulum, in the course of which, due heed was paid to hydrographic research.

In 1821, Lieutenant P. P. King was promoted to the rank of Commander and given the

command of the *Bathurst* sloop, for the survey of Western Australia. Captain W. H. Smyth having returned to England, exchanged the *Aid* for the *Adventure*, for the survey of the coast of Sicily. Lieutenant Frederick Bullock in the *Snap*, relieved Mr. George Holbrook in the *Sydney*, in Newfoundland. The *Kangaroo* was substituted for the *Landrail* in the West Indies, and the *Hasty* for the *Congo*, under Mr. Fitzmaurice, on the coast of England.

In this year, the Geographical Society of Paris was founded, and the science of hydrography at home and abroad, showed symptoms of rapid advancement.

In February 1822, Major Edward Sabine visited Sierra Leone, for the purpose of making pendulum observations. At about this time, Mr. John Wilson Croker L.L.D.,F.R.S. was the first, and Mr. (afterwards Sir) John Barrow F.R.S.,F.L.S. was the second secretary, to the Admiralty. From the former of these officials, it has been said, the Department received but scant encouragement. Nevertheless, from year to year the number of officers and vessels, irrespective of those employed by the East India Company, who were at this time contributing largely to the hydrography of the East Indies, Persian gulf &c. showed a slow but sure increase.

Under Dalrymple the newly created department may be said to have been an obscure institution, into the unrevealed secrets of which, few cared to venture to penetrate. Under Captain Hurd it seems to have passed alternately beneath the immediate control of either the civil or military heads, whichever chose to give most attention to it: and more especially during the latter part of this period, under the civil authority, perhaps, principally, from its members, with the exception of the chief, being civilians.

Captain W. F. W. Owen, and some of the older surveying officers, who had been employed abroad for some years collecting materials for charts, had returned to England, and been permitted to prepare their labours for publication at the Hydrographic office. They had suddenly received their dismissal, and on the score of expense, it was decided not to publish their surveys.

In fact, the department appears to have greatly depended then, as now, upon the regard of whoever might be the actual ruling authority at the Board of Admiralty, retrograding or advancing, in proportion to the position taken up by its head, and the breadth of the views concerning it, held by those having the preponderance of power in the Board's Councils.

During the last year of Captain Hurd's life, the charts published by the department, which, during the war, had been restricted to the Navy only, were thrown open to the Mercantile marine and public generally, their Lordship's sanction to this effect having been obtained, not without trouble, by Captain Hurd himself.

Early in 1823, the following were the surveys in progress, Captain Hurd having then been Hydrographer for about 15 years,

Commander P. P. King	...	*Bathurst*	...	W. Australia.
Captain M. White	...	*Shamrock*	...	English Channel.
Lieut. W. Hewett	...	*Protector*	...	E. Coast of England.
Captain W. F. W. Owen	...	*Leven*	...	Coast of Africa.
Lieut. H. W. Bayfield	...	(*Hired vessel*)	...	Canadian Lakes.
Mr. L. Fitzmaurice	...	*Hasty*	...	Bristol Channel.
Commander A.T.E. Vidal	...	*Barracouta*	...	W. Coast of Africa.
Lieut. F. Bullock	...	*Snap*	...	Newfoundland.
Mr. A. De Mayne	...	*Kangaroo*	...	West Indies.
Captain W. H. Smyth	...	*Adventure*	...	Mediterranean.
Mr. George Thomas	...	*Investigator*	...	North Sea & Shetland Islands.
Mr. George Holbrook	...	(*Hired vessel*)	...	Newfoundland.

Lieutenant Denham was chief assistant to Captain Martin White, Lieutenant Mudge to Captain W. F. W. Owen, Lieutenant Boteler to Commander Vidal, Commander Beechey to Captain Smyth.

The Hydrographic office remained in the same condition as in 1813.

Besides the above officers of the Royal Navy, the surveyors of the Hon. E. I. Company

were actively engaged in the East, being chiefly represented by Captain Daniel Ross, and Lieutenants Maughan and Lloyd, and later on, by Captains Guy and Brucks, during the period of Captain Hurd's administration at the Admiralty.

Of foreign nations, Don Jose Joachim De Ferrer, a Spanish officer, was appointed to establish the longitude of Havana. The services of M. Beautemps Beaupré in France have been already alluded to.

Major Franzini surveyed part of the coast of Portugal, performing for that country similar service to what Tofino had for Spain.

Gauttier, between 1816 and 1820, in the *Chevrette*, measured several excellent meridian distances in the Mediterranean and Black Seas; he also triangulated the Grecian archipelago.

Freycinet who had served with Baudin, again set forth in 1817 in *L'Uranie* for the Pacific, which vessel, in 1820, was wrecked at the Falkland islands. Excellent results attended the voyage.

Roussin in 1818, in *la Bayadere* and *le Favorite*, surveyed part of the Brazilian coasts; and M. Givry in the former vessel, during the previous year, explored the west coast of Africa from Cape Bojador to Isles de Los.

Captain Hell, between 1819 and 1825, surveyed the island of Corsica. M. Lartigue, in 1821, in the *Clorinde*, one of Admiral Roussin's squadron, obtained several excellent positions among the Cape de Verde and Canary islands.

Dr. J. L. Tiarks, in 1822, with 17 chronometers, established the longitude of Funchal, Madeira.

Captain Duperry, in *La Coquille*, added meteorological and hydrographic knowledge of an important nature, in that vessel's voyage round the world.

In the South Seas, private enterprise was actively at work in the persons of Messrs. James Weddell, R.N., and Brisbane, who in the brig *Jane* with the cutter *Beaufoy*, sailed in September 1822, for one of the most daring explorations ever attempted in the Antarctic Sea.

In May 1823, Captain Hurd died, aged about 70 years. It has been said by a high authority, "that though not strictly speaking a scientific man, he was an officer of good acquirements and great application, and that during his term of office he had greatly advanced the Department under many difficulties. His duties during the war, especially, were of a very arduous nature, his materials being imperfect and meagre. Under him a surveying service, composed exclusively of naval officers, had been inaugurated, although, up to his death it cannot be said either in *materiel* or *personnel*, to have advanced much beyond its infancy."

At the time of Captain Hurd's death he held the post of Superintendent of Chronometers, and was a Commissioner for the Discovery of Longitude, as well as Hydrographer; but he does not appear to have belonged to the Royal Society. He has been credited with the following charts and publications,

Brest Bay and Ushant island.
A folio of charts of English Channel, 1811.
Nautical Description of Brest Bay with Instructions for its navigation.
Bermuda Island.
North shore of the Bay of Fundy.
Four passage into Brest Bay.
Falmouth Harbour, Helford River and the coast to the Manacles, with Directions.
N. American coast, Penobscot to St. John's.
St. John's River to Little River (I. of Cape Breton).

DON J. J. DE FERRER, (Spanish).

1808-11

Don Jose Joachim De Ferrer was a member of the Philosophical Society of Philadelphia, corresponding member of the Royal Academy of Sciences in Paris, and of the Historical Society of Madrid, &c.

Between 1808 and 1811, this talented astronomer, devoted his attention towards settling with accuracy the longitude of Havana, in the West Indies.

To this end, the occultations of several stars and planets, as well as eclipses of the moon

and Jupiter's satellites were observed with an excellent achromatic telescope, made by Mr. Edward Troughton, five Burgos feet focal length, three inches aperture, with four eye-pieces, one direct and the rest inverting. It was mounted so as to observe in the zenith, as well as in every point of the heavens.

The time was taken from two chronometers, made by Arnold and Pennington.

The observations and results of M. de Ferrer's labours, compiled by himself, in two Memoirs, dated April 15th 1812, and April 5th 1816, were translated and abridged by Don Felippe Bauxa, at one time Director of the Hydrographical Department in Spain and communicated by him to the Royal Astronomical Society, by whom they were published in paper xxxi of their transactions, and read June 11th, 1830.

The result of his observations gave the Great tower of the Moro in longitude 76° 4' 34".5 west of Cadiz.

GEORGE THOMAS ESQ. (Master R.N.)

1810-46

This officer succeeded the civilian marine surveyor, Mr. Graeme Spence, on the home coasts in 1810, having been appointed in that year to the command of H.M. brig *Investigator* without any naval assistant.

The first survey accredited to him we believe to be that of Croque harbour in Newfoundland, dated 1808, on the 12th of November of which year, he was made a master.

The *Investigator* continued to be employed under Mr. Thomas on the east coast of England as well as on the Dutch coast and among the Shetland islands until 1836 or for a period of 26 years, during the latter part of which, Mr. C. F. Cox, Master R.N., was appointed as Assistant Surveyor.

For a short space of time, in 1837, Mr. Thomas appears to have been without a vessel under his command, the *Investigator*, no doubt, being worn out.

At the latter end of that year, we again find him, however, in command of the *Mastiff*, which vessel had returned from surveying service in the Mediterranean, employed amongst the Orkney islands, with Mr. Wells, Master R.N., as a surveying assistant; with him also, was his relative Mr. F. L. W. Thomas R.N., afterwards a commander.

A tender, the *Woodlark*, was about this period attached to the survey, to the command of which, Lieutenant F. W. L. Thomas succeeded in April 1845.

Mr. George Thomas died in the autumn of 1846, and at the latter end of that year the *Mastiff* was paid off. Thirty six years of his life were devoted to the surveying service, very often with but slight assistance. His surveys had ever the impress of accuracy and care, and of the numerous charts engraved from them, the following specimens are quoted.

Croque harbour (Newfoundland).
Liverpool harbour.
Holyhead bay.
Coast of Holland and Flanders.
Fowey harbour.
Frith of Forth.
The Gatway (Yarmouth).
Outer and Inner Gabbard.
Orfordness to Lowestoft (Suffolk).
Eyemouth to the Tay.
The Shetland islands.
Balta Sound.
Several of the Orkney islands.

Sailing Directions for the Orkney and Shetland islands, in North Sea Pilot, part 1, 8*vo*. Published by the Admiralty in 1857.

ANTHONY DE MAYNE ESQ. (Master R.N.)

1811-27.

The date upon which this officer obtained the rank of Master was the 31st of July, 1806, and the first record extant of his services as a naval surveyor appears to have been in 1811, when he, as master of the frigate *Amelia*, Captain Irby, made a valuable investigation of the

coast of West Africa from Cape Palmas to Cape Formosa. He was next engaged on the North American Station, where Sir Alexander Cochrane employed him in surveying the river Chesapeake, from Cape St. Augustine to the southward.

He was then sent to the Bahama islands to report or a newly discovered port and anchorage, reported a few leagues eastward of New Providence; of this he made a finished chart, and wrote a nautical description, which were forwarded to the Admiralty.

In 1817, he was placed in command of H.M. Schooner *Kangaroo*, for surveying service in the West Indies. His surveying assistant from 1819 to 1826, was Mr. Edward Barnett (now a retired Admiral), and from 1825 to 1827, Mr. Alfred Miles, who afterwards became a commander, and was for many years employed as a Naval Assistant in the Hydrographic Department of the Admiralty.

During Mr. De Mayne's servitude in the West Indies, he was chiefly engaged in surveys of the Gulf of Florida, Cay Sal, New Providence, Nassau, Jamaica, &c. He fixed astronomically the positions of Jamaica, Pedro Bank, Cayman, and other places.

In September 1827, Mr. Miles brought the *Kangaroo* to England, Mr. De Mayne having by some accident been left behind.

He died in 1828; Commander Richard Owen, in H.M.S. *Blossom* succeeded him in the charge of the West India survey, at the latter end of that year.

Among the charts constructed from De Mayne's surveys were the following,

River Gambia to Cape Lopez (W. Africa).
The Gulf of Florida.
Cay Sal bank.
New anchorage.
Crooked island passage.
Keys and shoals in the
Mira-por-vos passage.
Porto de Cavanas (Cuba).
Island of Jamaica.
Kingston and Port Royal harbours.
Bahia Honda.
Royal and Egg Islands.
Pelican and Little Harbours.
Douglas Road.
Whale and Green Turtle Cay anchorages.

MAJOR M. M. FRANZINI, (Portuguese).

1811.

Major Marino Miguel Franzini of the Royal Engineers of Portugal, performed in his day, similar labours in the cause of the hydography of that country, that Commodore D. V. Tofino had previously carried out for Spain. Taking as a model, the atlas and directions of that officer, the Major informs us in the Introduction of his work, published in 1812, and ably translated into English by Captain W. F. W. Owen in 1814, that the great advantages resulting to navigation from good Hydrographic charts are so generally acknowledged, that to accumulate proofs of it, would be superfluous and tiresome.

Also that, the modern perfection of Mathematical Instruments, by advancing the sciences relating to Astronomy and Hydrography, has occasioned some modern charts to attain a degree of perfection that will not easily be excelled.

Before Franzini took in hand the hydrography of Portugal, the best authority on the coasts and harbours of that country was the chart made by Tofino; but thwarted by political circumstances, he was obliged to pass rapidly by the Portuguese coasts, and to limit himself to such observations, as the shortness of his time permitted. These reasons caused this part of Tofino's Atlas to be much inferior to the remainder.

Franzini, while serving in the Royal Navy of Portugal, lost no favourable opportunity of making observations, nor of acquiring such information as might contribute to the execution of his hydrographic work.

The British Admiral, Berkeley, having learnt his project, and desirous of accelerating its execution, ordered numerous soundings to be taken along the coast, and caused some examinations, which were wanting, to be made. In Franzini's chart, the heights of the hills

and mountains visible from the offing are from the geodesical observations of Doctor Ciyera, the views are from Tofino.

Tables show the differences between the positions as given by Franzini and those of former observers, such as Tofino and Piemontel, to which are added, statistics regarding the number of inhabitants of each town &c. Major Franzini's work offered a collection of the best elements and observations made on the coast of Portugal up to that date; and from them, a correct and circumstantial chart was made, which proved of the greatest use and assistance to navigators, making the coast of that country.

See, Description of the Coasts of Portugal, and Nautical Instructions to accompany the General Chart and plans of the said coasts, by Marino Miguel Franzini, Major in the Corps of Royal Engineers. Translated into English by Captain W. F. W. Owen, R.N., and published in the Hydrographic Office for the use of the Royal Navy by Captain Hurd R.N., Hydrographer to the Admiralty, 1814.

CAPTAIN MARTIN WHITE, R.N. *

1812-28.

Martin White entered the Navy, in 1793, on board the *Medusa*, Captain Norman. In November, 1794, having removed, as Midshipman, to the *Alexander*, Captain Bligh, he was in that ship captured, after a glorious resistance, attended with a loss to her of 40 men killed and wounded, by five French 74's and three frigates under Rear Admiral Nielly. On being restored to liberty he joined the *Topaze*, Captain Church, and sailed for the coast of North America, where he was in company, August 1796, with a squadron under Vice-Admiral George Murray, at the surrender of the French 36-gun frigate *Elizabeth*. The *Topaze* was on this occasion the most advanced ship in the pursuit, and was the only one that engaged the enemy. On leaving her, Mr. White who had for some time held the rating of Master's Mate, was made Lieutenant, December 1800, into the *Pylades*, Captain Bowater, in the North Sea. His succeeding appointments were—July 1802 to the *Alcmene* frigate, Captain Stiles—next, to the command of the *Pigmy* cutter—March 1864, to the *Queen*, Captain Theophilus Jones, lying at Portsmouth—and April and September following and June, 1806 to the command of the *Sandwich* lugger, *Manly* gun-brig, and *Jackdaw* schooner. The *Alcmene* was employed in the conveyance of troops: the *Pigmy* in watching the French ports near Chaussey; the *Sandwich* off Ostend and Flushing under Sir Wm. Sidney Smith: the *Manly* off Boulogne and in the North Sea; and the *Jackdaw* between Sheerness and Spithead. The *Manly*, through the ignorance of her pilot, ran on shore, in January 1806, near Rysum, on the Ems, and was there seized by the Dutch in violation of the neutrality of the river. After he had attained the rank of Commander, September 1806, he was appointed—November 1806, to the *Weymouth* store-ship—September 1808, to the *Vulture* guard-ship on the Jersey station, where he remained three years—and in August 1812 and January 1817, to the *Fox* and *Shamrock* surveying-vessels, in which he continued successively employed in the English, Irish, and Bristol Channels until 1828. Commander White was the first fairly recognised officer of that rank employed in the Naval Surveying Service; of his assistants who afterwards shone forth in the same sphere, were Denham and Kendall. The early charts of the Channel, more especially the off shore soundings, were the work of Commander White. As a reward for his services he was advanced to Post-rank December 1818. He accepted retirement October, 1846.

Captain White constructed in 1824, two charts of the coast of Ireland; with others, of the islands of Jersey, Guernsey, Sercq, Herm, Alderney, and the Caskets (with plans of Grand, Bordeaux, and St. Sampson's Harbours, of the Pier at Montergueil, of St. Brelade's Bay, of Grand Greve, Baleine Bay, and of the anchorage between Herm and Jethou); one also of the English Channel east of Beachy Head; and in 1829, of Salcombe and Dartmouth Harbours; and in 1830, one showing the result of his investigations from Cape Carteret to Cape Frèhel, including the islands of Jersey, Sercq, and Chaussey. His surveys

* The Naval and war services chiefly from O'Byrnes Naval Biography, 1849.

among the Channel Islands and upon the coast of France were associated with those of the eminent French hydrographer M. Beautemps Beaupré; and his name stands recorded upon the pages of the French Maritime Atlas. He became a retired Rear Admiral in July 1851, and died 1865, aged about 85 years.

Rear Admiral White also published:

General observations upon, and Sailing Directions for the English and Irish channels and Channel Islands. *4to.* 1822.

On the erratic propensities of chronometers *8vo.* 1830.

Remarks on the winds, tides, and currents of the ocean, with other phenomena. *8vo.* 1844.

REAR ADMIRAL W. H. SMYTH, C.B., D.C.L., F.R.S.*

1815-24.

William Henry Smyth, b. [illegible] January, 1788, at Westminster, was descended, paternally, from the celebrated Captain John Smith, whose valour and genius proved so instrumental to the colonization of Virginia.

This officer witnessed in a merchant-vessel the reduction of Tobago, and took part in the E. I. Co.'s frigate *Cornwallis* in an expedition against the Mahé Islands in 1804: he entered the Navy March, 1805, when the latter ship was purchased by Government, and placed under the command of Captain Johnston, with whom he continued to serve in the *Powerful* until transferred in October, 1809, to the *Milford*, Captains Baynton and Kittoe. He was present, in the *Cornwallis*, in a variety of skirmishes with the enemy's batteries on the Isle of France; and in an attack made, November 1806, in company with the *Sceptre* upon the French frigate *Semillante*, 3 armed ships, and 12 sail of merchantmen, at anchor in St. Paul's Bay, Bourbon. He also cruized in the Pacific. On his return to Europe in the *Powerful*, Mr. Smyth accompanied the expedition of 1809 to the Scheldt. After participating, in the *Milford*, in numerous attacks upon the enemy's coasting-trade near Rochefort, he proceeded to Cadiz, where, being appointed to the command, September, 1810, of a large Spanish gun-boat, the *Mors-aut-Gloria*, he continued employed in its defence until 1811. Uniting in nearly every service performed by the flotilla, he was present, September 1810, in an action with the enemy's batteries near Matagorda. On his return to Cadiz, after the termination of the battle of Barrosa Mr. Smyth, who had acquired an accurate knowledge of the channels, was placed in charge of a large flat, armed with a 32-pounder carronade. In his boat he had 3 men mortally wounded, and was nearly sunk by the enemy's batteries in the neighbourhood of Matagorda. On finally leaving Cadiz the *Milford*, joined the fleet off Toulon. Here Mr. Smyth removed, August, 1811, to the *Rodney*, Captains Allen and King, in which ship he attained the rating of Master's Mate December following, and returned to England in November 1812. For a valuable survey he had made of the Isla-de-Leon, as well as for charts formerly furnished by him to the Admiralty of ports in the East Indies, which he had surveyed, but as to the authorship of which there had so far been some doubt, he was presented with a Lieutenant's commission dated March, 1813, and appointed to a command in the flotilla employed under Sir Robert Hall in the defence of Sicily against Joachim Murat. He was subsequently engaged in conducting a series of hydrographic operations connecting Barbary, Sicily, and Italy—a service in which he displayed much talent. He continued his labours in a Sicilian gun-boat long after the British troops had evacuated the island, and their Lordships promoted him September, 1815, to the rank of Commander, and expressed their intention of having a selection of his drawings engraved and published, that he might reap the benefit. Difficulties unforeseen causing this arrangement to be altered, it was determined that the "Atlas of Sicily" should be engraved in the Admiralty Office, and that Captain Smyth should publish "A Memoir descriptive of the Resources, Inhabitants, and Hydrography of

* Services of Rear Admiral Smyth, except those of a hydrographic nature, from O'Byrne's Naval Biography, 1849.

that and of the neighbouring islands; of this work the Admiralty purchased 100 copies. In 1817, Captain Smyth was appointed to the *Aid* sloop, and in her he was selected to complete the survey of the shores of the Adriatic commenced by Napoleon Buonaparte; and assisted by a party of Austrian and Neapolitan officers, and by the Imperial sloop-of-war *Velox*, he accomplished his task in less than two years, His next and last appointment was January, 1821, to the *Adventure*, in which vessel, he was again ordered to the Mediterranean for the purpose of carrying out a plan for perfecting the survey of that sea.

He fixed the geographical position of Gibraltar mole, by runs with five chronometers, between Palermo, Malta, and Falmouth. Also a chain of points along the coasts of Spain, Corsica, France, and Italy. Surveyed the Italian and Ionian islands; and in conjunction with the foreign officers alluded to, the whole shore of the Adriatic. Completed an examination of the North coast of Africa, from the mouth of the Nile to the strait of Gibraltar, inclusive. The positions of his points on the coast of Corsica agreed with those afterwards ascertained by Captain M. Hell of the French Navy, and his position of Malta was verified by Gauttier, a coincidence which, with others, induced Sir C. Penrose, then the Admiral, to report highly on the subject to the Admiralty.

Wherever Gauttier took observations on shore, his positions and those Smyth were found to agree very nearly.

Owing to Smyth's representations, and before his surveys were published, the latitudes of several places on the then existing charts of the Mediterranean, were altered considerably.

The additions he made during his absence to astronomy, geography, and hydrography, procured for him the congratulations of Scientific Europe: and raised him to the first order of maritime surveyors. "The more I see of your Mediterranean surveys," says Sir F. Beaufort, "the more I admire the great extent of your labours, the perseverance of your researches, the acuteness of your details, and the taste with which you have executed the charts. Take them altogether, no survey has ever before issued from the Admiralty that can be compared to yours. It is quite astonishing the work you did—and did it in such a masterly manner—in the time you were abroad."

While employed in his various surveys in the Mediterranean, Captain Smyth used five chronometers. He afterwards recommended his work, not as arriving at ultimate precision but as being near enough for all the purpose of navigation. Among his pupils, were Beechey, Skyring, Graves, and Raper, all notable surveyors in their days.

While he commanded the *Adventure*, Captain Smyth received from Mehemet Ali an offer of "Cleopatra's Needle," intended as a present to George IV.—but an opportunity of attempting its embarkation did not occur.

He attained Post-rank February, 1824: paid the *Adventure* off in the following November, accepted retirement October 1846 became a Rear Admiral May 1853, and died the 8th September, 1865, aged 77 years.

He constructed the following charts and views, viz.

A general outline chart of the Mediterranean; Galita Island and the Gulf of Cattaro; the coast of Egypt from Alamaid to the Rosetta branch of the Nile (with two views); the Gulf of Spezia, with plan of Via Reggio; the harbour of Villa Franca (with two views); the coast of France and Italy from Cape Roux to Monaco; the port and road of Marseilles and the position of La Caseidagne Rocks; twenty six of Sicily; the harbours of Pantellaria and Lampedusa, as also of the Pelagie islands and of the Island of Linosa; four of Malta, three of the south coast of Spain; three of the west coast of Greece; two of the Morea; one of the south coast of France; nine of the north coast of Africa; four of Sardinia; eight of the Adriatic Sea; and four of the west coast of Italy.

In March, 1816, he received the small Cross of the Order of Ferdinand and of Merit. He was presented by the Emperor of Austria with a gold snuff-box decorated with brilliants. In 1821, he was admitted into the Antiquarian and Astronomical Societies of London; in June, 1826, he was elected a F.R.S.; in 1829, he was named an Associate of

the Academy of Sciences at Palermo; and in July 1830, he was chosen one of the Council of the Geographical Society of London—an institution he had been instrumental in establishing. It came about in this wise. Such a Society had been suggested by Captain Smyth at a party at Mr. F. Baily's, the Astronomer Royal, on the 12th of April, 1830.* A few days afterwards, Captain Smyth printed and circulated a prospectus, and a provisional committee of 52 was formed, including the following officers connected with the navy and hydrography—Beaufort, Horsburgh, Basil Hall, Owen, Graves, Bethune, Smyth, and Sir John Barrow. The first secretary was Captain Maconochie R.N., and the first copy of the R.G.S. Journal was published in 1831.

He became one of the Committee for improving and extending the Nautical Almanac, a Doctor of Civil Law, a President of the Royal Geographical Society,† an honorary member of the Royal Irish Academy, one of the Board of Greenwich Visitors; and a corresponding member of the Institute of France, the Scientific Academy of Naples, the National Institute of Washington, the Academy of Sciences at Boston, and the Naval Lyceum of New York.

From January 1828 until October 1839, and from that period until June 1842, a meteorological register (published monthly in the United Service Journal) was kept by Captain Smyth in an observatory erected by him, first at Bedford and then at Cardiff. The instruments belonging to the late Colonel Beaufoy, were lent to him for that purpose by the Council of the Astronomical Society, until his own were made. Independently of the work alluded to in the former part of this narrative, Captain Smyth (to whom the public is indebted for the formation of the United Service Museum) published,

Present state of Sardinia, 1828.
Life and Services of Captain Beaver, R.N., 1829.
Account of a private observatory at Bedford, 1830.
Account of an ancient bath in the Island of Lipari.
Catalogue of Cabinet of large Roman brass medals, 1834.
Observations on Halley's comet, 1836.
Nautical observations on port of Cardiff, 1840.
A cycle of celestial objects, 2 *vols*, 1840
Description of an astrological clock belonging to the Society of antiquities, 1848.
Address to the members of the Royal Geographical Society, 1850.
Notice of the Scientific Services of Baron Humboldt, 8*vo*. 1852.
The Mediterranean Memoir, 1855.
History of the New World (translated from Girolamo Benzoni), 1857.
Cycle of celestial objects continued up to 1859, 1860.
The Sailor's Word Book, 1867.

GEORGE HOLBROOK ESQ., (Master R.N.)

1818-32.

This officer was made a master on the 28th of May, 1795, and he appears to have been one of the navy officers selected by Sir Alexander Cochrane about the year 1814, and employed by him on the survey of parts of the Eastern Coasts of North America.

The Navy Lists for 1814 show that in that year, Mr. George Holbrook commanded the *Sydney*, at that time engaged in surveying upon the eastern shores of Newfoundland.

In 1820, Mr. William Bullock R.N. was appointed to assist Mr. Holbrook taking out from England, a small tender for that purpose, with a picked crew of ten men.

H.M. brig *Snap*, under Lieutenant Hose, was in 1821 sent out for surveying service to the same part of the world; on her arrival on the North American Station, Lieutenant Frederick Bullock appears to have succeeded to the command. Mr. Holbrook at about this time returning to England.

He appears to have been subsequently engaged on surveying service in Newfoundland

* The Royal Geographical Society and its labours, 8*vo*. 1846.
The African and Palestine Associations, established in 1788, and in 1805, were incorporated with the Royal Geographical Society shortly after its formation in 1830.

† Rear Admiral Smyth who was President of the Royal Geographical Society from 1849 to 1851, was the restorer of the prosperity of that Society. He was Vice President in 1845, and again from 1851 to 1855. In 1855, he received the gold medal for his work on the Mediterranean. His portrait hangs in the Society's Council Room. (Fifty years history of the Royal Geographical Society, by Clements Markham, C.B., F.R.S.)

until about the period of his death, which took place in 1832.

Very few Admiralty charts have been published in his name, of such were the following,

East coast of Newfoundland from Bonaventure Head to Rocky Bay, including Bonavista Bay, with Directions and Views.

Barrow Harbour.

CAPTAIN WILLIAM HEWETT, R.N.

1815-41.

This officer first went to sea in 1805 in the *Indefatigable*, employed on the coast of France, in the Bay of Biscay, and latterly in China. In 1811, he joined the *Cornwall*, and in 1813, in the *Inconstant* under Captain Sir Edward Tucker, on the coast of Brazil, he made several surveys, notably those of Penambuco, St. Marcos bay, Maranham, and coast from Ceara to Maranham and Rio. Promoted to Lieutenant 1814, he was nominated, after his return to England, to command the surveying-vessel *Protector*, on the 7th of March, 1818. One of the first duties undertaken by him was to accompany Captain Kater to the Orkneys with M. Biot, at the instigation of the Royal Society, for pendulum experiments, connected with ascertaining the figure of the earth. From this period until 1830, in which interval he was made a Commander, he was constantly employed in surveying the coasts of Norfolk, Lincoln and Yorkshire, including the Humber, Lynn, and Boston Deeps, the Gabbards, the Dudgeon, the Leman, and Ower.

Commander Hewitt rendered essential service to the compass committee, by his experiments and suggestions on the several trial compasses committed to his care. In 1830, his great work of the survey of the North Sea commenced, the *Protector* was soon found unequal to the task, and in December 1831, the *Fairy* was commissioned to take her place. Four first class chronometers were employed, and he speedily discoverer an error of 2000 feet in the length of the side of one of the Dutch triangles, by General Krayenhoff.

In January 1837, Commander Hewitt was made a post-Captain. His observations enabled Professor Whewell to determine, with respect to the tides of the North Sea, that there must be a certain position in that sea, in which there would be no rise and fall, but a gradual gyration of the water. In 1840, the eighth years produce of North Sea operations had been just obtained, and the *Fairy* was on the point of returning to winter quarters at Woolwich, when she was ordered to Yarmouth to report upon a dredging invention of Captain Manby, for removing bars of harbours and rivers. In a great gale of November 13th, 1840, the *Fairy* was lost with all hands, having been last reported between Lowestoft and Southwold on the morning of the 13th, and to have been seen capsize by a North country brig, when sailing on the starboard tack under close reefed top sails. A box of papers, triangular piece of board, stand of an instrument, and lid of a chart box, recognised as belonging to the *Fairy*, were picked up on the Suffolk coast, in the month of December.

Fifty pounds reward was offered by the Admiralty for the discovery of the wreck of the *Fairy*, but no more was ever heard of her. A special fund for the widows and orphans of the officers and men, met with hearty sympathy and support, from the outside public as well as in the navy.

Amongst the numerous contributions to hydrography of Captain Hewett were,

Remarks on the Leman and Ower shoals, situated in the North Sea. 8vo. 1826.
Remarks on the navigation of Yarmouth roads. *Naut. Mag.* vol. vi. 1837.
Report on a Marine Artificial Horizon.
Essay on the encroachment of the German Ocean along the Norfolk coast, with a design to arrest its further depredation. 8vo. Norwich 181.
Harbour and Road of Pernambuco.
Chart of the North Sea from Dover and Calais to Orfordness and Scheveningen
Cromer to Trusthorpe.

Trusthorpe to Flamborough Head.
Flamborough Head to the Tees.
East coast of England, from Covehitheness to Cromer, with the adjacent dangers.
The Leman and Ower shoals.
Coast of Norfolk from Hasborough to Blakeney.
Lynn and Boston deeps, with the Burnham flat, Docking shoal, Blakeney Knock and Overfall.
Entrance to the river Humber.
With other charts of the East coast of England and North Sea.

VICE ADMIRAL W. F. OWEN.

1815-47.

William Fitzwilliam Owen entered the Navy in June 1788, as a midshipman, on board the *Culloden* attached to the Home station; where, and for a short time in the West Indies, he continued to serve in the *Zebra* sloop, *Assistance*, *Vengeance*, *Hannibal*, and *Culloden* again, until the close of 1794. In the last mentioned ship he fought in the famous action of the first of June, under Lord Howe, against the French, off Ushant.

On his return to England from the Cape of Good Hope, whither he had gone in the *Ruby*, he joined, in November, 1795, the *London*, bearing the flag of Vice Admiral John Colpoys. For his conduct during the mutiny at Spithead he was promoted, June 1797, to the rank of Lieutenant; and at the same time placed in command of the *Flamer* gun-vessel.

He was next, between December 1798, and October 1801, employed, principally in the Channel, on board the *Charon*, *Gorgon*, and *Namur*, flag-ship of Earl St. Vincent, and for seven months in command of the *Nancy*, fire-vessel. Assuming command, July 1803, of the *Sea Flower*, brig, Lieutenant Owen, after serving for a time on the French coast, sailed for the East Indies, where he effected the capture, July 1806, of *Le Charles*, a French national ketch. In the following September he explored part of the Maldive Islands, and their channels, and on the 10th of November in the same year, he discovered an excellent channel now bearing the name of his brig, situated between the islands of Siberoet and Pulo, Poro, near the west coast of Sumatra.*

Having conducted Sir Edward Pellew's squadron through the intricate navigation into Batavia Roads, he there distinguished himself by his gallantry in command of a division of boats, at the capture and destruction of a Dutch frigate, seven brigs of war, and about 20 armed and other merchant-vessels.

In September 1808, Lieutenant Owen was taken captive by the French, who detained him at Mauritius where Captain Flinders was also at the time a prisoner, until June 1810; from August to November of which year, he was employed in superintending the transports sent from Madras to that island. He then, having been awarded a commission dated May 1809, obtained command of the *Barracuta* employed in the summer of 1811 at the reduction of the island of Java, where he assisted at the debarkation of the troops at Chillingching, and continued attached to the army until after the surrender of Batavia.

In December 1811 Captain Owen, who had been advanced to post-rank the preceding May, and had held for a short time the command of the *Piemontaise* at Bombay, was appointed to the *Cornelia*. In 1812, he took possession, with a squadron under his orders, of the island of Palembang. He returned to England with a China convoy in June, 1813; and was subsequently appointed March 1815, to carry out the surveys of the lakes of Canada, from whence he returned to England in 1816, leaving Lieutenant Bayfield in charge of this important work.

Captain Owen then for a short time became attached to the Hydrographic Department of the Admiralty, contributing his assistance and advice with Captain Peter Heywood to Captain Hurd, the hydrographer, in the formation of the Naval Surveying Service.

His linguistic acquirements enabled him at about this time to translate the charts and sailing directions for the coast of Portugal of Major Franzini; the result of his labours in

* Geography of the Maldive islands by Captain Owen, published in the Royal Geographical Society's Journal for 1832, p. 81

this respect, being published by the Hydrographic Department of the Admiralty, in a quarto volume, in the year 1818.

In August 1821, at the age of about 46 years, Captain Owen was appointed to the command of the *Leven*, with the *Barracouta*, Captain Cutfield, under his orders, for the survey of parts of the east and west coasts of Africa, and the coast of Madagascar. Under him as officers of those vessels, subsequently known as eminent nautical surveyors, sailed Lieutenants Vidal, Mudge, Boteler, Arlett, and Richard Owen, with C. Gepp Robinson and Badgley as midshipmen, while Mr. Forbes joined the expedition as naturalist.

The narrative of this interesting hydrographic voyage was not published until 1833, and then not by Captain Owen himself, but by Mr. Heaton Bowstead Robinson.

The only Hydrographical Directions published with this narrative were drawn up by Mr. John Walker, the Assistant Hydrographer, and dated May 20th, 1823, with a further Memorandum by the same authority, dated June 30th, 1824.

The equipment and manning of the vessels occupied until January 1822, when the expedition sailed by way of Lisbon, Madeira, Santa Cruz, Porto Grande, and Rio de Janeiro to the Cape of Good Hope. Here a survey was made of False, Haut, and Table bays by the *Leven*, while the *Barracouta* was ordered to proceed along the south east coast of Africa as far as Algoa bay, and to determine *en route* the geographical positions of the various prominent points. At the same time, Captain Owen drew up a memorandum for the guidance of H.M. brig *Heron*, Captain Job Hanmer, which vessel Commodore Nourse resolved to despatch to the southward, in search of the Telemaque shoals and other reported dangers off the Cape of Good Hope.*

On the 3rd of August 1822, the *Leven* left Table bay and commenced the survey between cape Hanklip and the Keiskamma river, and thence northward to Delagoa bay. Having examined the river Temby or Mahong for 46 miles from its mouth, and been subjected to an attack by the Zulus, the Mattoll, Dundas, and other rivers to Delagoa bay were partly examined. Captain Lechmere, who had become attached to the expedition as a companion to Captain Owen, was the first officer to lose his life from the deadly effects of the climate, to which the duties on shore of all concerned exposed them. He was speedily followed by the carpenter, Mr. Tambs, midshipman, and Captain Cutfield of the *Barracouta*, the latter dying during the survey of Delagoa bay.

Consequent upon this, Lieutenant Vidal succeeded to the command of the *Barracouta*, while Lieutenant Mudge became first lieutenant of the *Leven*, Boteler being transferred in a similar capacity to the former vessel. The decked boat, or tender, termed the *Cockburn*, was left to complete the survey of Delagoa bay, and of the river Mapoota, under Lieutenant R. Owen.

A running survey of the coast from Inyack island southward to port Durnford was then commenced, the names of Morley bank and Watkins creek being given after the master and a midshipman of the *Leven*, both of whom, at this time, lost their lives from the effects of the climate.

The vessels next visited the French colony in Madagascar, of Quail island or Isle Madame.

January 8th, 1823, they sailed for Johanna, of the Comoro islands, where, having communicated and obtained provisions, the vessels parted company, rejoining each other nine days afterwards at Mozambique.

Having surveyed the harbour of Mozambique, the ships again parted company February 7th, 1823, the *Leven* continuing to the Angozha river, St. Anthony bank, Mafamede island, Matthew island, Walker reef, Barrow, and Caldeira islands, Hurd island, Spot reef, Raza or Epidendrae island, Casuarina island, Crown sand, Fogo island, South sand or de Sylvas, and David bank, rejoining the *Barracouta* on the 13th, near Cape Croker, when surveys and chronometers were compared, That vessel had examined the coast from

* Commodore Nourse fell a victim to African fever, in August 1824, caught it was said through sleeping ashore at Zanzibar.

Mozambique to the Bazaruta islands, and made some slight observations off Sofala and the mouths of the Zambesi river. Again parting company the *Leven* visited the Bassas da India or Europa rocks, and continued to the southward, surveying towards Delagoa bay, and arrived in English river, March 1st.

It was here found, that the tender *Cockburn*, which had been left behind under the command of Lieutenant Richard Owen, had but seven left out of a crew of 20 officers and men: all had been stricken down by the fever; amonst the officers who had died, were Dr. Conolly, and Messrs Joyce, Hood, and Henderson, midshipmen.

March 16th, the ships, with the *Cockburn*, proceeded for Simons bay, adding to the survey of the coast on the passage. The *Leven* arriving April 7th: and the *Barracouta* seven days afterwards. The *Cockburn*, owing to a mistake made in the navigation when entering Simons bay, ran ashore and became a total wreck. Here, two months were spent in completing charts, refitting &c.

Although only seven months had elapsed since the vessels last quitted the Cape, the mortality had been fearful. Two-thirds of the officers, and more than one-half of the seamen having fallen victims to fever.

Early in June 1823, the schooner *Albatross* was purchased at the Cape, to take the place of the wrecked *Cockburn*, as a tender, the command as before being intrusted to Lieutenant Owen.

The *Barracouta* left for Algoa bay on the 16th of June, and was shortly afterwards followed by the *Albatross* and *Leven*, the rendezvous appointed being Algoa bay.

July 2nd, the *Barracouta* sailed from Algoa bay for Quilimane with a party of explorers for the Zambesi river, consisting of Lieutenant Browne, Mr. Forbes, and Mr. Kilpatrick an assistant surgeon.

July 6th, the *Leven* sailed for Delagoa to finish the survey of that bay and the Mapoota and Dundas rivers: this, and the plan of port Melville having been attended to, that vessel anchored under the north point of the Bazaruta islands September the 12th: thence, proceeding to Sofala, the *Barracouta* was fallen in with, on the 16th of the same month.

That vessel had successfully landed Lieutenant Browne and party, and been almost wrecked on the bar of the Quilimane river, after surveying which, the Bazaruta islands and the Inhambane river had been visited, in quest of her consort; a fortnight being spent in the survey of the latter.

Having surveyed Sofala bay, the vessels proceeded past the mouths of the several branches of the Zambesi river, calling at Casuarina roads, and arrived at Mozambique October 4th.

During this visit, Lieutenant Mudge assisted by Messrs Badgley and Foster, surveyed the harbours of Conducia, Mozambique, and Mokamba.

October 15th, the small squadron quitted Mozambique for their destinations. The *Albatross* and *Barracouta* were ordered to Patta, to survey the coast between that place and Mozambique, where they were to meet the *Leven* on the 14th of March 1824. The latter vessel continued to Bombay, which port was arrived at November 22nd.

Here the charts of east Africa were completed up to date, and forwarded to England.

From Bombay Captain Owen continued to Muscat, in order to procure the necessary passports from the Imaum to enable him to survey the coast of Africa from Cape Guardafui to Zanzibar.*

January 1st, 1824, the *Leven* beat down the coast to a village named Hessat Shekh. It was the intention to trace the coast minutely from Muscat to Dafoor, but as when inshore, it was found that the wind constantly failed, this had to be abandaned: but the survey was re-commenced at Ras el Had, and continued to Ras el Hubba, near which, anchorage was found.

* In 1812, Lieutenant Smee of the Hon. E. I. Co., made a survey, on a small scale, of the coast between Zanzibar and Cape Guardafui. This was by direction of the government of Bombay. Captain Owen corroborated most of Lieutenant Smee's observations.

The *Leven* next made Ras Jibsh, and surveyed the outer coast of Massera island, continuing to Aboo Rassas, then steering along the coast of the main land, and passing in turn, the Shoal cliffs, Cape Isolette, Raskooviat, and Ras Markass, to Cape Morebat. Here, Captain Owen became seriously ill from a stroke of "the blat," a pernicious land wind which produces rheumatic fever and affections of the bones, and 140 leagues of coast having been examined since leaving Muscat, it was decided to continue to Socotra. The north side of Socotra was arrived at January 13th, and examined, and having passed between Socotra and the Saboyna rocks, a bay in Abdul Koory island was next anchored in.

Having sighted cape Guardafui and rounded Ras Hafoon, the coast was run along for some 80 miles to Ras el Khyle, and Mukdisha anchored off, and its position astronomically ascertained. The next anchorage was off the tower of Manara, originally intended as a sea mark; from thence, the mouth of the river Juby was made, and course steered for Lamoo.

The *Leven* left Lamoo February 4th, and having communicated with Mombas, anchored off the fort of Pemba on the 5th of the same month, and thence to Zanzibar, where letters from Captain Vidal of the *Barracouta* announced that he had concluded the survey of the coast as far as 6° 28′ S latitude. Continuing along the coast the next port made was Lindy, from which Mizimbaty peninsula was steered for, port Ibo communicated with, and the *Barracouta* found surveying the coast off Picos Fragos (Broken Hills)

Since parting company with the *Leven*, October 15th, 1823, Captain Vidal in the *Barracouta* with the *Albatross*, had proceeded to survey the coast from Patta island, situated in latitude 2° S., to Mozambique, including the port of Lamoo; thence proceeding to Formosa bay, the survey was continued to Melinda road, which was reached November the 24th.

Four days were devoted to the survey of the Leopard bank, and on November 28th the vessels continued the examination of the coast to Mombas, which was anchored at December 3rd.

On the 7th December, the vessels left Mombas roads, the *Albatross* undertaking the survey of one part of the island of Pemba, while the *Barracouta* accomplished the remainder; after which Zanzibar was visited. From this place Lieutenant Boteler was despatched in the pinnace to survey the coast of the main land from the Pangany river southward.

January 1st, 1824, the *Barracouta* left Zanzibar for Latham island, and having examined this danger and fixed its geographical position, returned to Zanzibar on the 6th of January.

Quitting Zanzibar again on the 8th, with the *Albatross* in company, after grounding on a coral shoal, the *Barracouta* anchored near Monfia on the 10th, and devoting a week to the survey of the neighbouring islets and dangers, continued to Quiloa, of which a survey was made.

January 30th, the prosecution of the survey southward of Quiloa was persevered in, the deep bay into which the Lindy river empties itself, visited, and Mikindany bay anchored in; the Querimba islands surveyed, the position of the town of Ibo fixed, Pomba bay surveyed; the *Leven* joined company March 5th, near the Broken Hills northward of port Mozambique.

The vessels continuing to the last named port, arrived there March 11th, and remained until April 4th, completing the charts. On that day, the *Leven* left for Delagoa bay and Mauritius for the purpose of running meridian distances, and the *Barracouta* for Quilimane and St. Augustine bay of Madagascar, where the *Albatross*, after examining Chesterfield island and Juan de Nova, was to join her, preparatory to commencing the survey of the west coast of Madagascar.

Upon arriving at Mauritius 21st of May, Captain Owen heard of the loss of H.M.S. *Delight*, Captain Hay, which had foundered in a hurricane with all hands, February 23rd, 1824.

Mr. Badgley and C. G. Robinson were landed at Mauritius to recruit their health, and

on the 16th of July, having sent home 29 sheets of charts, the *Leven* sailed for the east coast of Madagascar.

Tamatave of Madagascar was reached July 18th, and surveyed, and the *Leven* next anchored off the town of Foul point, from whence the coast to the southward was examined, and Port Louis of St. Mary island anchored in July 28th, and the survey continued to Port Choiseul at the bottom of Antongil bay. The river Maransectzy was explored by Captain Owen, and August 13th, Mr. E. P. Durnford the principal hydrographer remaining in the *Leven*, after whom, the ports of that name, in south east Africa, as well as in Madagascar, were named, fell a victim to dysentry.

Continuing to Diego Suarez or British Sound, an examination of this spacious bay, described as one of the finest harbours in the world, was made.

Having concluded the survey of this harbour, Cape Amber was geographically fixed, after which, St. Mary island was again returned to. Here, Mr. Hilsenberg the botanist, had to be landed, dangerously ill with yellow fever. The *Leven* continued the survey of eastern Madagascar, naming port Leven, Leven isles, Cape Barracouta, and Cole islands; the latter after the governor of Mauritius, in hopes of inducing him to send some person to examine it. Calling at Johanna, and Mozambique, the *Barracouta* was again fallen in with by Captain Owen at Mombas.

That vessel, had, on parting company in April, proceeded to Quilimane, to ascertian the fate of the Zambesi expedition landed there on a former occasion—all had died, Mr. Forbes previous to, and Lieutenant Browne and Dr. Kilpatrick after reaching Senna. Lieutenant Browne had served as a midshipman in the *Lyra* under Captain Basil Hall, and the illustrations in that officers account of Loo Choo, were chiefly taken from his drawings.*

May 11th, the *Barracouta* anchored off Sandy island, at the southern extremity of St. Augustine bay, Madagascar; here, the *Albatross* under Lieutenant W. Mudge joined company, Lieutenant Owen having been removed to the *Leven*.

This vessel had been 3 weeks surveying the bay; continuing with the *Barracouta* to Tullear bay and Grave island, the latter so-named from the fact, that on the 22nd, of May, two midshipmen Messrs Bowie and Parsons, were foully murdered by the natives, and afterwards buried on that island, the coast from St. Augustine to Boyauna bay, was closely examined, as well as the off-lying islands.

The *Barracouta* and *Albatross* then steered for Bembatooka, in the northwest part of Madagascar.

July 31st, the survey of the remaining portion of the coast between Bembatooka and Boyauna bays was undertaken, after which, a day was spent at Mayunga: Majambo bay was then visited and explored, and Narinda continued for, Keyvoondza rock, near the west point of Passandava bay being anchored off, after discovering and naming the Radama islands.

This bay, as well as the Minow group was surveyed, and from the 7th to the 17th of October, was spent amongst the islands off Cape St. Sebastian, after which, Mombas was steered for, and reached October 23rd. Here news of the death of Lieutenant Reitz, who had remained at Mombas with Mr. George Phillips, to explore the river Pangany and make himself acquainted with the topography of the country, was received.

December 9th, the *Leven* left Mombas for Seychelles, the *Barracouta* steering for Juba, the former reached Mahé island by the 25th, where Captain Owen received orders from the Admiralty to survey the west coast of Africa on his way home. The *Barracouta* surveyed the labyrinth of islands between Juba and Kwyhoo bay, and the Durnford river, in latitude 1° 13′ S., so-named after the young hydrographic officer whose death has been alluded to; continuing to, and surveying the Dundas islands, thence to Lamoo, and again to Mombas January 30th, 1825.

The *Leven* left Mahe the 30th of December, passed some days among the Seychelles,

* For particulars of Lieutenant Browne's expedition, communicated by Captain Owen,—see Royal Geographical Society's Journal for 1832, p. 136.

surveying Dennis islet the northern of the group, and then proceeded to Mukdisha, making many valuable additions to her former work during this part of the voyage. Lamoo was arrived at on the 17th January 1825, and Mombas three days afterwards.

February 2nd, the *Leven* left Mombas for Zanzibar, examining the west coast of Pemba island, and on the 10th, left Zanzibar for Mahé, where she arrived the 1st of March, being joined shortly afterwards by the *Barracouta*. A particular survey was made of the Seychelles before leaving on the sixth of April for Madagascar (the *Albatross* had previously sailed to examine the coral group of Cargados Garagos islands), Cape Amber was passed on the 17th, and a survey made of ports Robinson, Jenkinson, and Liverpool, thence continuing to Bembatooka. Leaving the latter place May 6th, with the *Barracouta* in company, Mozambique was reached May 9th, and again departed from May 14th for St. Augustine bay, where anchor was cast June 1st. Another run to Mauritius was made by the two vessels in company between the dates of June 3rd and 15th, and here the *Albatross* was found, having completed the survey of the Cargados Garagos islands. Sailing again July 10th, after examining Tromelin islet, the *Leven* touched at St. Mary, thence to Tamatave and port Dauphin, doubled the south point of Madagascar, examined the Star bank, and arrived at St. Augustine bay August 20th; sailed the next day for Delagoa bay, where anchor was cast on the 28th, Europa island having been examined on the way. After touching at Natal, all three vessels arrived at Simons bay 28th of September, 1822. Here, Mr. Farley the purser, and Lieutenant Richard Nash a passenger on board the *Leven*, died.

Having completed a survey of Table bay, and sent the *Barracouta* on in advance, the survey of the west coast of Africa was commenced by Captain Owen in the *Leven*, on the 9th of November, 1825,

"Captain Owen's orders did not require that he should survey the coast from the Cape of Good Hope to the river Congo: but, as it was very imperfectly described in the charts, he determined upon making at least a passing inspection, and adding what information his time would admit to hydrographical knowledge." *

The first place anchored at was Walfisch or Whale bay. Next an examination of the bay, called in the old charts Rostra da Pedra was made; and in latitude 22° 32′ a mountain of considerable elevation, having near it a large body of water, forming a kind of lake, about 40 feet above the level of the sea, was observed, and Great Fish bay reached November 28th.

According to arrangement, the closer recognizance of the west coast of Africa was to commence in 19° S. latitude, the point where H.M.S. *Espiegle* had discontinued in 1824.

From Great Fish bay, the *Leven* proceeded to Port Alexander and Little Fish bay, Turtle bay, St. Mary bay, St. Francis point, to Benguela, which was anchored off December 6th, and St. Paul de Loando, where the *Barracouta* was found December 9th, having already surveyed that bay. On the 19th, the *Leven* sailed for Ascension, arriving January 2nd, 1826; and there learnt, that the *Albatross* had left that island December 17th, and the *Coquille* with the French circumnavigator Duperrey, a few days previously—Captain Sabine had also recently visited the island, to fix its position, but had left no result.

After surveying the Isles de Los, the *Leven* next sailed for Sierra Leone, where the *Albatross* was already engaged in a similar way; thence, in company, the vessels continued to the Banana islands, Great Turtle Islands, and Sherbro river. March 11th, Mr. Charles Bullen and Mr. Hutcheson, midshipmen, died of fever, and many of the crew, as well as that of the *Albatross*, became seriously ill. On the 21st, the vessels were again amongst the Turtle islands, and another death, that of Mr. Charles Barrette, midshipman, occurred.

April 1st, the vessels left for Sierra Leone, arrived on the 3rd, left again on the 11th, and commenced the survey of Rio Grande off the Bijuja islands on the 21st, and shortly

* "Page 227, Vol 2, of Owen's Voyage."

afterwards that of Bulama harbour or Beaver port, and Bissao, tracing the shores of Galinhas, Hog, Kanyabac, Orango, and Bawak islands.

May 17th, Lieutenant Richard Owen, with Messrs. Tudor and Mercer, midshipmen, proceeded in the steam vessel *African* to examine the river Gambia. May 24th, the *Leven* left for Sierra Leone, obtaining a base line by sound off Crawford island, and an inspection of the coast having been made by one of the boats, between Isles de Los and Sierra Leone, the *Leven* arrived at the latter port June 1st, and was joined by the *Barracouta* June 10th.*

The *Barracouta* left Table bay October 26th, 1825, anchored off Dassen island, Saldanha bay, Angra Pequena; fixed position of Cape Negro, and surveyed Benguela.

December 5th, left Benguela, passed Nova Rodonda, and arrived at St. Paul de Loando on the 8th. Having surveyed this bay, the *Barracouta* and *Leven* left in company on the 10th, the former continued to the mouth of the Congo, anchoring each night and carrying on a running survey by day. Entering the Congo on Christmas Eve of 1825, for six successive days, no headway could be made against the stream, but on January 1st, favoured by a stronger sea breeze than usual, Shark point was passed, and anchorage found 25 miles above the southern entrance of the river. Mr. Robinson examined the south, and Lieutenant Boteler the north shore, as far as Cape Palmeiro, the deep channel of the river being traced for 13 miles above Cape Pillar.

January 5th, the *Barracouta* left the Congo, and two days afterwards anchored in Kabenda bay, quitting again January 8th, and anchoring in Loango bay the next evening. This bay was surveyed, and leaving on the 10th, the survey was continued to Cape Lopez, the geographical position of which was accurately determined, and on the 27th, the survey of the coast to the northward continued to the Gaboon river, the southern entrance point of which, was accurately fixed, and the mouth surveyed.

February 4th, the Gaboon was left for Corisco bay, which was well surveyed in the course of 14 days, the coast to the northward examined, and the river Camaroons anchored off February 24th. The survey of the entrance of this river was completed by March 2nd, when the Bimbia was visited, but owing to scarcity of provisions, the survey of the coast was suspended March 6th, the *Barracouta* sailing for, and arriving in, Maidstone bay, of Fernando Po, on that day. Leaving again March 10th, the Bonny was reached on the 15th, and the mouth of that river and New Calabar surveyed; Commander Vidal and Lieutenant W. Mudge here received news of their promotion. Leaving the Bonny March 28th, the *Barracouta* sailed westward to Cape Formosa, from whence the coast was surveyed to the river Benin, off which, anchor was cast April 2nd. Having surveyed the mouth of the Benin, the survey was continued to old Calabar river, the bar of which, was more thoroughly examined, and on the 16th, the vessel continued for Rio del Rey. Rio del Rey was left April 20th, and Fernando Po again reached the next morning. May 1st, direct course from Fernando Po was steered for Sierra Leone, the *Barracouta* being almost dismasted on the passage, the latter place was reached June 4th, 1826, and here her consort, the *Leven*, was found at anchor.

Lieutenant Owen who left the *Leven* at the Bijuja islands to explore the river Gambia in the steam vessel *African*, having ascended as far as Macarthy island, and completed the survey of the river in six large sheets, returned to Sierra Leone, rejoined the *Albatross*, and sailed for England. Touching at Porto Praya, Mr. E. O. Tudor, senior midshipman, one of the most active members of the expedition, died, and was buried in one of the bastions of the fort, by the side of Captain Bartholomew, the former commander of the *Leven*, who had surveyed parts of the Cape Verd islands, and died here in 1821.

From Sierra Leone the *Leven* and *Barracouta* returned to England. During their five

* The survey of the coast allotted to Captain Owen could not be completed in the limited time: it was afterwards performed by Commander Boteler, in the *Heela*, during the year 1828; shortly afterwards that scientific officer, who had served throughout Captain Owen's African voyage, fell a victim to fever.

years absence under Captain Owen, [illegible] miles of coast line had been traced, and in some parts well surveyed, and the following charts and plans constructed viz :—

22 of the West coast of Africa.
31 „ East „ Africa.
12 of the East coast of Madagascar.
17 „ West „ Madagascar.
1 „ Grand Port, Mauritius.

Also, the southern coast of Persia and Arabia, two charts of the Seychelles, and of the port and bay in Mahé.

On his arrival in England, Captain Owen was almost immediately appointed to the command of the *Eden*, having with him Lieutenants J. Badgley (the translator of Roussin's memoir on West Africa from Cape Bojador to Mount Souzos) and S. M. Mercer, both of whom had served throughout his former expedition; also, Henry Kellett (afterwards a Vice Admiral). The object of the voyage of the *Eden* was to establish a settlement at Fernando Po, and to remove the mixed Commission Court for the suppression of the slave trade, from Sierra Leone. Paying off the *Eden* at the close of 1831, he was afterwards engaged in advising and drawing up plans for the government and administration of certain of our Colonial possessions.* Later on, he organised extensive plans for surveying parts of the coasts of north-east America and the Bay of Fundy, in addition to carrying out magisterial functions in those parts. In April 1847, he was placed in nominal command of H.M.S. *Columbia*, and having been promoted to Rear Admiral's rank in December 1847, returned to England.

He was made a Vice Admiral in October 1854, and died at St. John's, New Brunswick, on the 3rd November 1857, aged about 83 years.

In addition to the hydrographic labours enumerated, Captain Owen examined the coast of India from Cape Comorin along the shores of Malabar and Surat. He executed five sheets of charts also of the St. Lawrence river, from Ontario lake to the Gallop rapids, as well as those of lake Ontario, Toronto harbour, and Campobello island, and Quoddy head to Cape Lepreau, in the bay of Fundy.

Like others of the earlier energetic naval surveying officers, Captain Owen appears to have possessed the talent of obtaining an extraordinary amount of labour from both his officers and men. He does not seem to have spared himself however, and certainly, his nephew, Lieutenant Richard Owen, least of all, for, throughout the narrative, the hardest and least tasteful of the work, appears to have fallen to his share, when in command of the tenders *Cockburn*, *Albatross*, and *African*.

The advocates of geographical research in England, during the period of Captain Owen's survey, and more especially near its close, were very much devoted to Arctic Exploration. There was no Royal Geographical Society in those days, and this may have accounted for the apparent absence of any sign of recognition, having been awarded to the chief of these extensive operations.

At page 11 of the introduction to his narrative, he remarks, "No office ever defeated the intention of its projectors so perfectly as the Navy Board; for, instead of expediting the equipment of his Majesty's ships they threw every obstacle in the way, either by an ingenious misconstruction or wilful delay, whereas every application to the Admiralty was instantly ordered," and at page 232 of the second volume is stated "that the affectation

* At Fernando Po, a terrible sickness overtook the officers and crew of the *Eden*, all but three of the gun-room officers, as well as 46 of the men, died.

Captain Washington in his Report on the Progress of Geography in 1837-38, published in the Royal Geographical Society's Journal of 1838, when he held the position of Secretary of that Society, remarks,

"This gigantic survey, embracing the east and west coasts of Africa, from the Isthmus of Suez round by the Cape of Good Hope to the Pillars of Hercules, may be said to have been drawn and coloured with drops of blood. Twice did Captain Owen change his whole crew and officers; those accomplished surveyors, Captain Boteler and Skyring, fell a sacrifice during its progress, and now, in the hour of conclusion, the crews of the *Etna* and *Raven* have all but shared the same fate."

of extreme minutiæ and of reasoning on new hypothesis to account for all possible effects, and to make the Royal Society a stepping stone to the honours and benefits of our service, has certainly produced more injury, by discouraging the unpresuming man of real professional merit, than it has done good by raising talent from obscurity."

The narrative of this surveying expedition not having been edited by Captain Owen himself, has been done but scant justice to. Compressed in a somewhat confused manner into two octavo volumes, with but few illustrations, and a chart which does not cover more than one half of the ground examined, it is difficult to disentangle the various accounts, or to gather, without looking backwards and forwards, whether the reader is learning of the *Leven* or the *Barracouta*, or if the remarks be those of Captain Owen, or of either Lieutenants Richard Owen or Boteler.*

The amount of work done certainly seems prodigious. With the sentimentality attached to search after such goals as the North Pole or a N.W. passage, there is much in the public *eclat* awarded to such undertakings, to encourage and stimulate an explorer, whatever the difficulties to be overcome; but, only the nautical surveyor proper, can fairly appreciate the dogged perseverance and persistent energy, attendant upon the operation of surveying coasts and rivers, day after day, and year after year, in a tropical and often pestilential climate, with an unsympathising and at times hostile population, face to face, too often, with disease and death. Two thirds of the officers, and one half of the men, succumbed.

There was no chart room in either of the vessels, the Captains had to give up their cabins for this work; nevertheless, duplicate charts were invariably forwarded with great punctuality to the Admiralty.

Of such men as Captain Owen and his assistants, it may be truly remarked, that they loved their work better than their lives. Besides the translation of Franzini already alluded to, Captain Owen has been credited with the following works:

Voyages to explore the shores of Africa, Arabia, and Madagascar from 1821 to 1826. 2 vols 8*vo*. 1833.
Tables of Latitudes and Longitudes by chronometer of places in the Atlantic and Indian Oceans. 4*to*. 1827
To which was added an essay on the management and use of chronometers, edited by Commander Richard Owen. 4*to*. 1827.
On Circum-meridian altitudes at sea or on shore. 4*to*. 1844.

CAPTAIN OTTO VON KOTZEBUE, (Russian).

1815–1826.

Otto Von Kotzebue, the son of the celebrated German author, was a cadet on board the *Nadeska*, under Krusenstern, in 1803–1806. When a lieutenant, he was selected by that great hydrographer to command a vessel sent out by the munificence of Count Romanzoff, and named the *Rurick*, to endeavour to penetrate to the north of Behring Strait, and make other explorations.

It was first resolved to send the timber requisite to build a small vessel of 25 or 30 tons on board one of the ships belonging to the American Company, to the N.W. coast of America; the officer to whom the undertaking was to be confided, was to embark at the same time with his pilot, and crew of chosen men, and have the vessel put together at Oonalashka or Kadiak.

This plan was given up on account of want of space in the Company's vessels. It was then resolved to have a vessel of about 80 tons, with sliding keels, on the plan of Captain Schanck, similar to the *Lady Nelson*, in which Lieutenant Grant surveyed Bass Strait, built of oak in the Imperial dockyard; this plan, however, could not be executed.

Eventually the *Rurick*, of 180 tons, built of fir, at a cost of 30,000 roubles, at Abo, was found to answer the purpose, admirably, for which she was intended. Her crew consisted of 20 men, besides the officers and naturalists.

Lieutenant Kotzebue writes "I bespoke the astronomical and physical instruments in

* An interesting abridgement of Captain Owen's voyage, by Lieutenant Wolfe is published in the Royal Geographical Society's Journal, for 1833.

England of the justly celebrated Troughton; they consisted of several sextants, compasses, two marine barometers, a dipping needle, an anemometer, thermometers, hygrometers &c. To these I added the log and sounding machine of Massey, a Six-thermometer, a mountain barometer, a camera lucida; the last articles by that ingenious artist, Th[illegible]s, a pupil of the celebrated Ramsden, and two telescopes by Tully. I bespok[illegible]nometers, a pocket chronometer by Burraud and a box chronometer by Hardy.

Besides these instruments, and an extensive collection of maps by Ho[illegible], Arrowsmith, and Purdy, the ship was provided by the English Admiralty, with a lif[illegible] Fincham, the master ship-builder at the Royal Naval Dockyard, Plymouth.

A valuable Introduction to the account of this voyage of Kotzebue, as well as his Hydrographic Instructions in the first volume, and a chapter upon the hydrographical results of the voyage (there being some doubt as to the priority of discovery), are written by Krusenstern, the great Russian hydrographer, and are both instructive and concise.

The *Rurik* left Kronstadt July 30th, 1815, and Plymouth in the following October; thence by way of Teneriffe and Brazil, round Cape Horn to the coast of Chili; and in March 1816, touched at Easter island, where the natives, exasperated by the injuries committed on them by the American traders, resisted the landing of the crew.

On the 1st of August 1816, he discovered on the American shore to the north of Behring strait, a wide opening, commencing in latitude 66° 42′ 30″ N., longitude 164° 14′ 50″ W. This he entered, and made a rapid survey of, suspecting the existence of a passage out of it to the south-east communicating with Norton Sound: another channel running to the westward.

The naturalists who accompanied Kotzebue were surprised to find grounded on the shore, an iceberg 100 feet in neig[illegible] completely covered on the summit with a layer of soil and luxurious vegetation.

Kotzebue quitted this inlet, to which he gave his name, on the 15th of August, and crossed over to visit the coast of Asia. He wintered in that archipelago of the Pacific, which includes the Nautilus, Chatham, and Calvert islands. To these he gave new names, and seems to have regarded them as new discoveries.

In the following year he again sailed for the north, but met with heavy gales, and having been thrown by the pitching of the ship, against a beam, with such violence as to break his breast-bone, his health became so seriously affected, as to render him incapable of bearing the vicissitudes of a northern climate. He returned to Europe, after having made some further discoveries in the Radack channel, the Low archipelago, and the Caroline islands, anchoring in the Neva, August 3rd, 1818.

The narrative of this voyage, translated into English by H. E. Lloyd, was published in three octavo volumes in 1821, and in addition to the valuable remarks of Krusenstern, contains in the second and third volumes, most valuable historical information on the inhabitants of the South sea islands, their customs, and languages, drawn up by Adelbert V. Chamisso the naturalist of the expedition; also, a vocabulary of the dialects of the Mariana Islands, and of Eap, Ulea, and P[illegible]k islands. Charts accompany the work of part of the Marshall islands (called Romanzoff, Radack, and Ralick, by Kotzebue), and the Caroline islands.

His second voyage was made in the *Predpriatie (Enterprise)*. This ship had been first destined for a voyage purely scientific, but circumstances occurred which rendered it necessary to change the object of the expedition, and Captain Kotzebue was ordered to take in at Kronstadt, a cargo for Kamschatka, and to sail from the latter place for the north-west coast of America, in order to protect the Russian American Company from the smuggling carried on there by foreign traders.

On this station, the ship was to remain for one year, and then to be relieved by another, and to return to Kronstadt. The course to be followed, both coming and going, was left to Captain Kotzebue.

May 1st 1823, the ship, which was the first built in Russia under a roof, and the size of a

medium frigate, was declared complete. She was armed with 24 six-pounders, and carried 4 lieutenants and numerous other officers, besides 2 naturalists, an astronomer, a mineralogist, a chaplain, and a physician; making with her crew 145 persons in all. In her outfit, were two pendulum apparatus, a theodolite by Reichenbach, besides astronomical and other scientific instruments.

July 14th 1823, (old style, according to which all reckonings during this voyage were made) the *Enterprise* was inspected by the Emperor, and on the 28th she sailed, touching at Rio de Janeiro, thence round Cape Horn, making important additions to our knowledge of the Low archipelago, the Navigator islands, the Radack chain, Sitka, and the Ladrone islands; returning by way of the Phillipine islands, Cape of Good Hope, and St. Helena to Kronstadt, July 10th, 1826.

Plans are published in the English translation of this voyage, of Matavai bay, (Tahiti) the Navigator Islands, and the Rurick chain of Islands.

For account of Kotzebue's first expedition, See,

A voyage of Discovery into the South Sea and Behring strait, for the purpose of Exploring a North East Passage, undertaken in the years 1815–1818, at the expense of the Chancellor of the Russian Empire, Count Romanzoff, by Lieutenant Otto Von Kotzebue. 3 Vols, 8vo. 1821.

For the second expedition,

A new Voyage round the World in the years 1823 to 1826 by Otto Von Kotzebue. Post Captain in the Russian Imperial Navy. 2 Vols 8vo. 1830

ANTHONY LOCKWOOD ESQ., (Master R.N.)

1813–1818.

This officer was appointed by Sir Alexander Cochrane when Commander in Chief in North America and the West Indies to carry out the survey of Nova Scotia. He was at the time of his appointment in about 1813, acting master attendant at Barbados. Former Navy Lists give the date of his seniority as a master, 27th May, 1795.

In 1811, Mr. Lockwood surveyed Culebra or Passage island of the Virgin islands in the West Indies.

He does not appear to have commanded a vessel of war, but carried out his work with a hired vessel and crew, and without any officer to assist him.

At the completion of his labours in 1818, he wrote a hydrographic work upon Nova Scotia containing charts of Bedford basin, Sambro harbour, St. Mary's river, Country harbour (Sandwich bay of Des Barres), Eastern Nova Scotia, Port of Liverpool, Shelburne, South Nova Scotia.

Mr. Lockwood appears to have been a veritable *rara avis*, so contented was his disposition judging from some of the remarks he makes in the preface of his books after retirement from his profession, which took place in 1818 "Secured from necessity in age, by the liberality of the Board I have the honour to serve, and enjoying an income exceeding my wants, I disdain the slightest wish to derive pecuniary benefit from this humble attempt to be useful."

He lived to enjoy his pension for 37 years, dying in the early part of 1855.

He terms himself on the title page of his book "Professor of Hydrography, and assistant Surveyor General of the Provinces of Nova Scotia and Cape Breton."

See, A brief Description of Nova Scotia, with plates, including a particular account of the Island of Grand Manan. *4to. Cadell and Davies*, 1818.

A chart of New Brunswick constructed by Lockwood was also published in 1818.

COMMANDER J. K. TUCKEY, R.N.

1816.

James Kingston Tuckey was born in August 1776. As a boy he was said to have been of an ardent and inquisitive mind and quickly imbibed a predilection for the naval profession.

The period when Mr. Tuckey fixed his choice, being that of peace, and no opportunity being afforded for entering the navy, he undertook, in 1791, a voyage to the West Indies, followed by a second to the bay of Honduras, in which he caught a fever, that nearly deprived him of life.

On the breaking out of the revolutionary war he was received on board the *Suffolk* at the recommendation of Captain (afterwards Sir) Francis Hartwell. In that ship he proceeded to India, and was soon rated master's mate; he was present at the capture of Trincomalee from the Dutch, and received a slight wound while serving in the batteries from the splinter of a shell.

He assisted at the surrender of Amboyna. When the English undertook the defence of the Dutch from the native chiefs of that island, Mr. Tuckey was stationed in a brig to cruise round its coast; and on firing a gun at a party in arms assembled on the beach, it burst, and a fragment broke his right arm. Having no surgeon he was obliged to set it for himself in truly sailor-like fashion, so that, in a week after, it had again to be broken by the advice of a surgeon. Mr. Tuckey never completely recovered the use of this arm.

From Amboyna the *Suffolk* proceeded to Macao, and thence to Ceylon; and when at Colombo on the 15th January, 1798, a serious mutiny broke out on board, in the quelling of which, Mr. Tuckey exerted himself with so much success, that though wanting eighteen months for the completion of his servitude to qualify him for a lieutenants commission, Rear Admiral Rainier appointed him, the following day, acting lieutenant of that ship. From the *Suffolk* he removed to the *Fox*, and when belonging to that frigate, but being at Madras in a prize, intelligence was received that *La Forte*, a French frigate, was cruising in the Bay of Bengal. H.M.S. *Sybille* immediately prepared for sea, and Mr. Tuckey with a small party of seamen belonging to the *Fox*, volunteered their services in her. In this notorious action, in which *La Forte*, though of superior size and metal was captured, Lieutenant Tuckey commanded on the forecastle: he afterwards received an acting commission from the Admiral for his meritorious conduct.

In August 1799, he was sent in the *Braave* to the Red Sea, and on his way thither, at the Seychelles, captured a ship proceeding to Europe with an embassy from Tippoo Sultaun to the French Directory. On his arrival in the Red Sea, having rejoined his old ship the *Fox*, many months were spent cruising in the gulf of Suez and thence to Bombay. The excessive heat of the Red Sea seems to have laid the foundation of a liver complaint which never quite left him.

Towards the latter end of 1800, having again proceeded to the Red Sea, contrary to advice, he arrived at Jeddah in January 1801; but in the course of a month his complaint returned, and his health suffered so many severe shocks, that he was reduced to a skeleton, and obliged to make his way back to India, where the Admiral intrusted him with his dispatches for England.

His native climate soon re-established his health, and in 1802 he was appointed first Lieutenant of the *Calcutta*, in which situation he served throughout her voyage, the object of which was to form a new establishment at Port Phillip. He made a complete survey of that port as well as an examination of the coast and surrounding country. The Lieutenant Governor, Colonel Collins, transmitted to the First Lord of the Admiralty a most flattering testimony of his merits. He was also furnished by the Lieutenant Governor with letters of recommendation to Sir Joseph Banks, and reaching England in 1804, he published an account of the voyage.*

In 1805, the *Calcutta*, in which ship he still continued, was captured by the French fleet on her homeward voyage from St. Helena, whither she had been sent to convoy home some merchant vessels. Captain Woodriff, her commander, determined to sacrifice the *Calcutta*

* In December 1803, Port Phillip not being considered a favourable site for the new settlement, it was removed to Hobartown of Tasmania. The colony of Victoria, having its capital, Melbourne, at the same port, was not permanently established until 1838.

to the safety of his convoy, and in order to bring this about, offered engagement to the whole squadron. His manœuvre proved successful; the *Calcutta* eventually had to strike her colours, but the valuable transports escaped.

Lieutenant Tuckey thus became one of the forty naval lieutenants kept as a prisoner during the war with France. He still kept up his spirits however, and in 1806, married Miss Margaret Stuart a fellow prisoner, daughter of a Commander in the E. I. Cos. Service.

Severe as his fate was, he possessed a mind of too vigorous and active a turn to sink under his unmerited misfortunes; the painful moments of his long imprisonment found some relief. in the laborious compilation and composition of a professional work "undertaken to pass away the tedious hours of a hopeless captivity, alike destructive of present happiness, and future prospects." This work was published in England shortly after his return, in four octavo volumes, under the title of "Maritime Geography and Statistics." It proved a work of useful reference, and abounded with general hydrographic information.

In August 1814, Mr. Tuckey was promoted by Lord Melville to the rank of Commander; and in the following year, on hearing of the intention of Government to send an expedition to explore the river Zaire, or Congo, he applied for and was selected for the command.

It was suggested by Sir Joseph Banks, who appears to have been the prime mover in this, as well as other expeditions of the period, that a steam engine might be found useful to propel the vessel built for the Congo expedition, against the rapid current of that river.

The burden of the vessel was not to exceed 100 tons, her draft of water 4 feet; of this tonnage, it was calculated, that the engine of 24 horse-power would alone occupy one third part; and of her measurement, the whole breadth of the vessel, and twenty feet of her length.

Such a vessel, Mr. Seppings the surveyor of the navy, undertook to construct, and at the same time to give her sufficient stability under sail to enable her to be navigated in safety to West Africa. Messrs Watt and Bolton were accordingly put in communication with Mr. Seppings in order that a proper steam engine might be fitted for the vessel.

Unfortunately however, either the engine with its boiler, was heavier than had been anticipated, or the vessel drew more water than had been designed; consequently the utmost speed produced was four knots an hour, and when lightened to a draught of 4½ feet her speed never exceeded 5½ knots.

Commander Tuckey, therefore, earnestly urged that the boiler and engine should be got rid of. It was accordingly removed from the *Congo* (the name the vessel had received) to Chatham dock-yard. The *Congo* was schooner rigged and had three sliding keels, and although in the opinion of many naval officers it was thought that she would never cross the Bay of Biscay, she nevertheless proved an excellent sea boat, and in working from the North Foreland into the Downs, distanced every other vessel similarly engaged at the same time.

The *Dorothy*, transport, of 350 tons, was appointed to accompany the expedition to the mouth of the river Congo—she carried two double boats with connecting platforms, as well as several smaller ones, for use in the higher part of the river.

The *Congo* carried 49 officers and men; amongst the former, were Lieutenant John Hawkey who acted as artist, and Mr. Lewis Fitzmaurice, Master and Surveyor, who attended to the hydrography of the expedition. There were also, on a supernumuary list Professor Smith, botanist, and Messrs Cranch, Tudor, and Galwey scientific civilians, and Mr. Lockhart from His Majesty's garden at Kew.

The ships reached the mouth of the Congo in the beginning of July, and after proceeding a short distance up the river, it was found advisable, from the strength of the current, to leave the ship, and to continue the expedition in boats.

Having advanced about 150 miles from the mouth of the river, they arrived at the

Yellala's Wife, a cataract or rapid extending nearly across the river. The party were here obliged to leave the boats, and pursue their journey by land.

A few miles farther on they found the Yellala, or Great Cataract, which was found to be in reality only a rapid, but at the same time, so violent, as to put a stop to the navigation of the river.

Near these rapids, the Congo was extremely contracted in its channel, and did not appear to pour down a large volume of water; but about 24 miles above the Yellala it opened into a noble stream, sometimes three or four miles wide; the scenery on its banks being highly picturesque and varied.

But now, when a ray of success seemed to gleam on the expedition, their calamaties commenced; one by one, the party were attacked by fever, and obliged to proceed to the ship. The turning point of the expedition was at a distance of about 280 miles eastward from the mouth of the river.

Commander Tucker, Lieutenant Hawkey, Mr. Eyre and ten of the *Congo's* crew, as well as Mr. Smith the botanist, Mr. Cranch the zoologist, Mr. Tudor the geologist, and Mr. Galwey a gentleman of science who had volunteered his services to the expedition, died soon after reaching the ship.

The senior surviving officer Mr. Lewis Fitzmaurice, the master and surveyor, and Mr. Hodder, master's mate, brought the *Congo* to England, where she was afterwards employed under the former, upon surveying service in the German Ocean and east coast of England. These officers almost entirely escaped from any attack of fever.

By observations taken by Mr. Fitzmaurice during this expedition, the west coast of Africa from Cape Lopez to the mouth of the river Congo, was found as much as from twenty to forty miles out in longitude. He constructed the chart of the river to the farthest point reached by Commander Tuckey.

The narrative of the expedition was written from the joint notes and journals of the officers concerned in it, as well as from those of Professor Smith.

In reporting the death of his Commander, Mr. Fitzmaurice observes "in him the navy has lost an ornament, and its seamen a father."

In his person, Commander Tuckey was tall, and must once have been handsome; but long service in India had broken down his constitution, and at the age of 30, his hair was gray and his head nearly bald. He was at all times gentle and kind in his manners, and indulgent to every one placed under his command.

A near relation observed, "that a want of sufficient economy, and an incapability of refusal to open his purse to others, had been the cause of many of the difficulties which clouded the prospects of his after life"; —that "he knew nothing of the value of money, except in that in enabled him to gratify the feelings of a benevolent heart."

The following were the works attributed to Commander J. K. Tuckey.

Account of a voyage to establish a Colony at Port Phillip in Bass's Strait, on the south coast of New South Wales in 1802-4. 8*vo.* 1805.

Maritime Geography and Statistics; or, Description of the Ocean and its coast. 4 Vols. 8*vo.*, 1815.

Narrative of an Expedition to explore the River Zaire, usually called the Congo, in 1816, under the direction of Commander J. K. Tuckey, R.N., with a chart and numerous plates of views &c. 4*to.*, Murray London, 1818.

CAPTAIN MURRAY MAXWELL, R.N.

1816–1818.

The above officer commanding the frigate *Alceste*, with the brig *Lyra*, Captain Basil Hall which took out Lord Amherst's embassy to China, added considerably to the hydrography of the north coast of China, gulf of Tartary, Corea &c., though, from a political point of view the expedition was not an entire success.

On the 9th of February 1816, the ships sailed from Spithead, having in company, the

Indiaman *General Hewitt*, Captain Campbell, on board of which were presents for the Chinese potentates it was intended to propitiate.

The *Alceste* called at Rio de Janeiro, the other vessels proceeding direct to the Cape. The two vessels of war met again in Anjer Roads, and overtook the *Hewitt* at Batavia. From thence the vessels made the best of their way to Macao, and the islands near Hong Kong. Here the expedition was augmented by the East India Company's surveying vessels *Investigator* and *Discovery*, the former commanded by Captain Daniel Ross, of the Bombay Marine.

On the 13th of July 1816, the squadron, consisting of four ships and a brig, sailed, and coasting the provinces of Quang-tung and Fokien, passed through the strait of Formosa and entered the Whang Hai or Eastern Sea. On the 26th, the mouth of the Pei-ho river was anchored off.

August 11th, preparations for an examination of the gulf of Liau-tung were set on foot, the *Lyra* attended by the *Investigator*, taking a southerly direction, whilst the *Alceste* and *Discovery* proceeded northwards. In this way, the shores of the gulf were successfully mapped, the ships meeting again at the bay or harbour of Kin-san-seu at the head of the Yellow Sea. The southern part of the gulf of Pe-chili surveyed by Captain Hall in the *Lyra* was generally found to be low, one elevation remarkable for its height above the adjoining land being named mount Ellis.

The East Indiaman *General Hewitt*, here parted company, for Canton, to complete the ulterior objects, allotted to her.

Leaving Kin-san-seu * August 26th, the four vessels arrived next day at Wei-hai-wei, described as an extensive and secure harbour. Mr. Gawthrop, the master of the *Lyra*, died here. The E. I. Cos. surveying vessels parted company, and returned to Macao, but the *Alceste* and *Lyra* continued their explorations. Basil bay in latitude 36° 9′ N. longitude 120° 32′ E., was discovered, about 120 miles up the country, as shown by the then existing charts.

Having completed this important examination, on the 8th of September the ships anchored in latitude 34° 20′ N., and the insulation of Alceste island having been ascertained, felt their way in to Murray's sound, of the Sir James Hall group.

Here, a number of observations were taken, surveys made, and distinguishing names given. From the summit of Montreal island one of the highest, as many as 135 other islands were counted, the main land, which seemed lofty, ranging from north east to east south east, distant about 40 miles.

From Murray's sound, Craig Harriet, Huntly Lodge, Windsor Castle, and other peculiar rocks were discovered, and Theatle island was landed upon.

On the 10th, the vessels left Murray's sound, and proceeding to the southward, discovered Lyra island, bearing east from Alceste about 30 miles. Sighting Sulphur island, a volcano in latitude 27° 56′ N., longitude 128° 11′ E., course was steered for great Loo-Choo island, the ruse being resorted to, of filling the hold of the *Alceste* with water, and setting the pumps to work, as if the ship had sprung a leak, in order to gain the sympathy of the inhabitants, who were known to be averse to holding communication with foreigners. Having refitted, the Canton river was again visited, the Chinese showing strong symptoms of hostility, and eventually, on the 9th of January 1817, the vessels took their departure for Manila of Luzon. † On the 9th of February, the *Lyra* parted company with her consort, proceeding to India with despatches.

The *Alceste* continued down the China Sea, and in attempting the strait of Gaspar, struck upon a sunken reef, and became a total wreck. The members of the Embassy, officers, and

* In Captain Basil Hall's narrative, this harbour is termed Che-a-tou.

† Canada is said to have derived its name from the Spaniards, when they landed in that quarter, repeating the words "aca nada" or "nothing here" (meaning there was no gold to be found) which the Indians caught the sound of. Some similar occurrence appears to have occasioned the name of Luzon. When Magellan's party first went on shore, they found one of the native women beating rice, as is usual at the present time, in a mortar hollowed from the trunk of a tree; and, finding herself surrounded by strange men, she held up to them the large wooden pestle, calling out "looson," which is the native name for it; and this becoming a by-word among the Spaniards, they named the island Luzon.

ships crew, betook themselves to the island of Pulo Leat, where they remained for some months in a state of siege from hordes of Malay pirates. Taken off by the *Ternate* and carried to Batavia, after a short stay at that place, they embarked for England, April 12th, 1818, in the ship *Cæsar*, and having touched at the Cape of Good Hope, and at St. Helena, where Napoleon Buonaparte was at that time confined, with him the various members of the expedition appear to have had an animating and pleasing interview. Ascension was subsequently touched at, and Spithead reached August 16th.

The resulting court martial held at Portsmouth, most fully acquitted Captain Maxwell and all concerned for the loss of the *Alceste*.

See, Voyage of H.M.S. *Alceste* along the coast of Corea, to the island of Loo-choo, with account of her subsequent shipwreck, by John M'Leod, Surgeon. 8vo, *London*, 1818.

CAPTAIN P. H. GAUTTIER, (French).

1816–20.

This officer in the *Chevrette*, a government transport, was charged by the French government, to determine by observations made with the best instruments, the positions of the most prominent points in the Mediterranean and Black Seas, as well as to triangulate the Grecian Archipelago.

Toulon was his starting point : four chronometers were used and many excellent meridian distances obtained.

The base of his operations, which are distinguished by great accuracy, was the distance between mount St. Elias of Milo, and mount St. Elias of Zea, which are almost on the same meridian, and measured astronomically, a distance of 105169 metres, the earth being supposed spherical.

Upon these two mountains, Captain Gauttier observed the latitude by numerous observations of the pole star. The difference of latitude was found to be 56″ 51‴ and by many true bearings taken at Milo, the true bearing of the base line was found to be N 1° 14′ 50″ W. and its actual length measured on the arc of a great circle 0° 57′ 0″.

Operations of a similar nature were repeated at Mount St. Elias of Paros, and Mount Jupiter of Naxia island. It was upon these four mountains, that the angles of the main triangles were measured, whence were concluded the positions of all the points in the Grecian archipelago, of which the latitudes and longitudes are given in a tabulated form.

The triangles were calculated on a spherical basis, without respect to any plane projection.

All the longitudes were referred to Milo, the meridian distance of which depends upon direct runs, to, and from Toulon, with four chronometers.

His astronomical positions which were distinguished by great accuracy agreed well with those of Captain Smyth ; in 1837, M. Peytier in his survey of Greece, found some of Gauttier's latitudes to be 15″ or 17″ too great, which he states would be diminished by 4″ or 5″ in consideration of the spheroidal figure of the earth ; some of his latitudes determined by observations on board ship were altered, but not to the extent of more than a mile of latitude.

See—M. Gauttier, Capitaine de Frégate, Positions Géographiques determinées en 1816-18, dans la Mer Mediterranée, l' Adriatique, et l' Archipel. 8vo. Paris 1820.

Also, Tableau des Points de la Mer Noire et de la Mer de Marmara, determinées pendant la Campagne Hydrographique faite en 1820. 8vo. Paris 1821

A chart of the Euxine or Black Sea was also constructed from Gauttier's observations and surveys.

ADMIRAL H. W. BAYFIELD.

1827–56.

Henry Wolsey Bayfield entered the Navy, January 1806, as supernumerary volunteer, on board the *Pompee*, bearing the flag of Sir William Sidney Smith. He joined soon afterwards the *Queen* flagship of Lord Collingwood, off Cadiz, and on being transferred, with

Lieutenant Spilsburg, to the *Duchess of Bedford*, hired armed ship, was slightly wounded in a severe action in which that vessel beat off, in the Gut of Gibraltar, two powerful Spanish feluccas, defended by double her own number of men. For his conduct on this occasion, Mr. Bayfield was placed as first-class volunteer, 29th September in the same year (1806), on board the *Beagle*, commanded, in succession, by Captains Newcombe and Dolling. Under the former of those officers he assisted in compelling the enemy to abandon an English merchant-vessel, laden with naval stores, which had been stranded under the sand-hills on the coast of Spain—contributed also to the capture, at different times, of the *Hazard Vengeur*, and *Fortune* privateers, carrying on the whole 44 guns and 155 men—and participating in Lord Cochrane's attack upon the French shipping in Basque Roads, in April 1809, was present in the operations of the 11th, 12th, and 18th of that month; on the last of which days, the *Beagle*, in company with other vessels, distinguished herself in an engagement of five hours with the *Océan*, *Régulus*, and *Indienne*, as these lay aground at the mouth of the river Charente, and was exposed for some time to a heavy fire from the battery on Ile d'Aix.

In the autumn of 1809, Mr. Bayfield accompanied the expedition to the Walcheren. In April 1811, having previously attained the rating of Midshipman, he rejoined Captain Newcombe on board the *Wanderer*, and during the three following years was employed on the West India, Halifax, Lisbon, and Spanish stations. He served in Canada during the American War. At the commencement of the peace, he assisted Captain Owen in the survey of Lake Ontario, the Upper St. Lawrence, and the Niagara river. He was appointed an Admiralty Surveyor in June 1817; and for nearly forty years from that period was engaged in the survey of lakes Erie, Huron, and Superior, with their connecting waters—the river and Gulf of St. Lawrence, including the great river Saguenay—the strait of Belle-Isle, and the coast of Labrador to Cape St. Louis—the islands of Anticosti, Prince Edward, Magdalen, and Cape Breton—also, Sable island, Halifax Harbour, and nearly the whole of the coast of Nova Scotia, from Halifax to the Gut of Canso inclusive.

In 1827, Commander Bayfield's survey of the river St. Lawrence was published. He met Lieutenant F. Bullock's survey at Belle Isle, and verified the positions of Cook in Newfoundland.

He obtained his first commission March 1815; acquired the rank of Commander, November 1826; was posted for his services as a maritime surveyor June 1834; and became a Rear Admiral the 21st of October 1856, Vice Admiral on the 27th of April 1863, and full Admiral on the 18th of October 1867.

Admiral Bayfield received a medal for the destruction of the French shipping in Basque Roads, and had a Greenwich Hospital pension of £150 a year awarded him on the 7th of February 1874.

In 1837, Captain Bayfield's "Directions for the Gulf and River St. Lawrence" were published by the Admiralty. This work is now contained in two octavo volumes, and had reached its 4th edition in 1860. *

His name was borne as a supernumuary Commander on the books of various of H.M. Ships during his surveying services. In 1830, in the *Hussar*. The greater part of his surveys were however carried out in the schooner *Gulnare*, and hired boats.

He contributed numerous papers to the Nautical Magazine, more especially upon longitude; and in 1835, one upon Terrestial Refraction observed in the River St. Lawrence.

Admiral Bayfield, in 1881, was about 88 years of age, and resident at Charlotte Town, Prince Edward's Island.

In addition to his earlier work, comprising in all, about 40 charts of the Gulf and River St. Lawrence, he made surveys of the following, which form almost a complete list of his manifold labours.

Trepassey harbour (Newfoundland). Camp islands to Mecklenburg harbour (Labrador).

* In 1881, a 5th edition of Captain Bayfield's Sailing Directions was in course of preparation.

Boughton or Grand River (Prince Edward island)

CANADA.

Erie Lake. Mohawk Bay.
River westward of Buffalo.
Niagara river.
St. Clair lake and river.
Huron lake.
Georgian bay.
Collingwood, Penetanguishene and Goderich harbours.
Collier port.
Rattlesnake harbour.
St. Mary's river, from Mud lake to East Neebish.
St. Mary's river from East Neebish to Iroquois point.
Lake Superior.
Grand Portage bay to Hawk islet.
Neepigon and Black bays
Small lake harbour to Peninsula harbour.

Chateau Bay, Belle Isle Strait (Labrador)
Red Bay, Belle Isle Strait ,,

NOVA SCOTIA.

Mars head to Shut-in island.
Sambro island to Cape Canso.
Halifax harbour.
Shut-in island to Pope harbour.
Ship harbour.
Pope head to Charles island.
Pope harbour to Liscomb harbour.
Liscomb and Mary-Joseph harbours.
Sheet and Mushaboon harbours.
Liscomb island to Green island.
Country harbour.
Green island to Cape Canso.
Whitehaven.
Cape Canso to Dover head.
Canso harbour.
Canso gut, with Chedabuctou bay.
Madame island and Lennox passage.
Guysborough harbour. Sable island.

CAPTAIN L. FREYCINET, (French)

1817–1820.

This expedition sailed from Toulon in the frigate *Uranie* on the 17th September 1817, Captain Freycinet, in command, was the same officer who had been first lieutenant of the *Naturaliste* in Captain Baudin's voyage, and who afterwards commanded the *Casuarina* attached to the *Geographie* at the close of that expedition.

The *Uranie* touched at Gibraltar and Teneriffe, and arrived at Rio de Janeiro, December 6th. Here, Captain Freycinet remained for two months engaged in taking numerous magnetic observations, and also observations with the pendulum apparutus, four of which he had been supplied with. The *Uranie* also carried four chronometers.

At the Cape of Good Hope and Mauritius, the latter of which the *Uranie* reached May 5th, 1818, similar observations were taken, which were of importance, as they could be compared with those by La Caille, made nearly 70 years previous.

After making a short stay at the Isle of Bourbon, Sharks bay on the west coast of Australia was reached September 12th. The survey of this bay which had been commenced under Captain Baudin was now completed, and September 26th, Freycinet sailed for Coepang in Timor, where numerous observations were taken, and on the 23rd of October, he resumed the voyage to Dilhi, the residence of the Governor of the Portuguese settlement, at the northern part of the island.

Leaving Dilhi November 22nd, the *Uranie* steered for Rawak islands, situated near Waygiou (New Guinea), almost exactly on the equator. During this passage, several parts of the coast of Timor, and of the islands in its vicinity were carefully laid down.

In passing between the island of Bouro and the islands of Amboyna and Ceram, Captain Freycinet verified the accuracy of the chart of that strait, made during the voyage of D'Entrecasteaux; and several parts of it were further explored and examined by the geographers of the *Uranie*. Following the same track as D'Entrecasteaux, Freycinet had an opportunity of determining the position of the islands situated south of Gilolo, and to examine, to the north of the Isle of Ruib, a dangerous archipelago, which had not previously been visited.

At Waygiou, charts were made of such portions of the north coast of that island as D'Entrecasteaux had only seen in passing; his operations also supplied detailed charts of Manouaran, Rawak, and of parts of the Island of Aiou. The *Uranie* remained at Waygiou from December 16th 1818, to January 5th 1819.

The next rendezvous at the Mariana Islands, was of nearly three months duration; a

delay rendered necessary not only for surveying and provisioning, but to allow time for the sick, who were numerous, to recover. The island of Guam was surveyed in canoes: and also the Island of Rota, and a considerable part of Tinian. Thus, the labours of the *Uranie* added to those of La Pérouse, only left the position of the northern-most small island undetermined; but as that island had been visited by Malaspina, materials were not wanting to complete a chart of the Mariana archipelago.

On the 5th of April 1819, the *Uranie* sailed from Guam; casting anchor at Owhyhee the largest of the Sandwich Islands, on the 8th of August: on the 16th, she touched at Mowhee; on the 26th, at Woahoo; and on the 30th, finally quitted that archipelago for Port Jackson.

Amongst the Sandwich Islands, the operations of the expedition, added to the charts, extensive portions of the coast, as well as plans of different harbours and anchoring grounds.

In the passage to Port Jackson, Captain Freycinet discovered Rose Island eastward of the Navigator group; and determined the positions of several smaller detached islands including that of Pylstaart, passed during this part of the voyage.

At Port Jackson the *Uranie* re-fitted, and numerous meteorological and magnetic observations were made. Here, Captain Freycinet determined the latitude by ten different stars, and the longitude by a great number of lunar distances.

The expedition left New South Wales, December 25th 1819, for Tierra del Fuego by the route south of New Zealand. On the passage, the position of Campbell Island and that of St. Ildefonso, Diego–Ramirez, Barnevelt, and Evoots, were verified.

Scarcely had the *Uranie* anchored in the bay of Good Success of Tierra del Fuego, on the 7th of February 1820, when a violent storm obliged them to cut the cables, and let the ship run under bare poles for two successive days. Captain Freycinet was therefore, compelled to abandon the pendulum observations, intended to have been taken in a high southern latitude, and continued for the Falkland Islands.

The *Uranie* was wrecked in French Bay of the Falkland Islands on the 13th of February, 1820, where the ship's company remained until April 17th—an American vessel which had accidently put in to that bay, had been purchased, and named the *Physicienne*, and on the latter date, the voyagers continued in her to Monte Video.

The lamentable catastrophe of the shipwreck, did not prevent Freycinet surveying the north and north west coasts of the most western of the Falkland Islands, and making plans of the three harbours which that island contains.

After remaining a month at Monte Video, the *Physicienne* sailed on June the 27th for Rio de Janeiro, where she arrived on the 19th. During a stay of three months, the observations made at this port, on the passage out, were repeated and verified.

Finally, on the 13th of September 1820, they quitted Brazil; stress of weather drove the *Physicienne* in to Cherbourg, from whence she finally arrived at Havre on the 13th November 1820.

The voyage thus occupied 3 years and 2 months.

Almost the whole of the hydrographical labour was executed by M. Duperrey, who afterwards commanded *La Coquille* on a similar voyage.

Voyage Round the World in the *Uranie* and *Physicienne* commanded by Captain L. Freycinet, 1817 to 1820 by J. Arago. *4to.* London 1823

Also an atlas containing 34 charts and plans.

M. Arago was the artist of the expedition, there was also an official account published in nine *4to* volumes. in Paris 1826-44 by Captain Freycinet, who had written a description of the voyage of Baudin in the *Geographe* and *Naturaliste* made in the years 1800-04.

MEMOIRS OF

REAR ADMIRAL P. P. KING, R.N., F.R.S., F.L.S.

1817–30.

Phillip Parker King, born December 1793, at Norfolk Island, in the Pacific, was son of Captain Phillip Gidley King, R.N., for some years Governor of New South Wales, who died September 1808.

This officer entered the Navy, in November 1807, as volunteer, on board the *Diana* Captain Grant; whose First-Lieutenant, Barclay, he well supported in an attack made by the ship's boats in the following year, upon a French convoy, passing between Nantes and Rochefort; King at the time being only sixteen years of age.

In December 1809, he was noticed for his gallantry in the boats under Lieutenant Miller, at the cutting-out of three schuyts moored to the shore at Odenskirk, and provided with heavy ordnance.

In September 1810, he proceeded as master's mate of the *Hibernia*, Captain White, to the Mediterranean, where he followed the latter officer into the *Centaur*, and joined in August 1811, the *Cumberland*, Captain Otway, and Baker. Towards the close of the same year, he was received on board the *Adamant*, flagship at Leith, of Admiral Otway.

After he had again served for 18 months with Captain Grant, in the *Armada*, on the Mediterranean station, he was transferred to the *Caledonia*, flag-ship of Sir Edward Pellew, through whom he was promoted, in February following, to a Lieutenancy in the *Trident*, guard-ship at Malta, bearing the flag of Rear Admiral Laugharne.

He next, from July 1814, until July 1815, served on board the *Elizabeth*, Captain Gower, flag-ship of Rear Admiral Fleeming at Gibraltar; and in February 1817, was intrusted with the conduct of an expedition, having for its object, a survey of the north and west coasts of Australia; on which he continued to be employed, first in the *Mermaid*, cutter, and subsequently in the *Bathurst* sloop (to the command whereof he was promoted July 1821).

For this service, he sailed from Port Jackson, in the *Mermaid*, of 84 tons, December 1817, the survey of the coast of New Holland being intended from Arnheim bay to North west cape, including Van Diemens bay and Rosemary island, with a view to discover a river in that neighbourhood, and including an examination of the shore line between capes Lewin and Josselin. He visited Bass's strait, King George's sound, Dampier's archipelago. In 1818, we find him at Rowley shoals and refitting at Coepang. On three occasions he searched for the Tryal rocks, and examined the coasts of Tasmania northward of Hobart town, measuring meridian distances, also, between Mount Adolphus, Wessel island, and Java.

In 1821, he exchanged the *Mermaid* for the *Bathurst*, and was promoted to the rank of Commander.

In June 1822, he refitted at Mauritius, and again visiting the western coast of New Holland, Houtmann's, and Abrolhos, corrected the coast laid down by D'Entrecasteaux, Flinders, and Baudin.

Reviewing the results of the four voyages made by Commander King, between the years 1817 and 1822, in continuation of the discoveries of Flinders, the object most worthy of attention, is a river on the northern coast, termed the Liverpool river of Port Essington, in the peninsula to the north of Van Diemen gulf. Commander King remarks "As a harbour, Port Essington is equal, if not superior, to any I ever saw; and, from its proximity to the Moluccas and New Guinea, and its being in the direct line of communication between Port Jackson and India, as well as from its commanding situation with respect to the passage through Torres strait, it must, at no very distant period, become a place of great trade, and of very considerable importance."

The gulf of Van Diemen was discovered by three Dutch vessels that sailed from Timor in 1805. They entered, but did not explore it; and, up to 1818, its shores remained unknown. When Commander King sailed out of it, he coasted the northern shores of

the northern Van Diemen Land, which had hitherto been considerd a peninsula. On doubling cape Van Diemen, he found an inlet opening to the south, which appeared to be the mouth of a great river, and he and his companions, entertained no doubt, that they had discovered what had long been the object of anxious research on the Australian continent, a river of considerable magnitude—when, on advancing, the open sea again appeared, demonstrating that what they took to be a river was only a strait.

Upon examination, it appeared, that Van Diemen Land of former maps was composed of two islands, separated by a narrow channel, to which the name of Apsley strait was given. This strait is forty miles in length, and from one to three broad; the depth is generally from 10 to 13 fathoms; but at the southern extremity, there are many shoals, and the channels are intricate. Of the two islands, the largest, which is the eastern, was named Melville Island; the western, which is about half the size of the first, was named after Lord Bathurst.

The broad channel between Melville Island and the main land of Australia, termed Clarence strait, has a low and uninviting coast. Cambridge gulf, in latitude 15°S., which at first had the appearance of a river, was found to terminate at a distance of 70 miles from its mouth in a few small streams.

Admiralty Gulf, York Sound, and Brunswick bay in the northern part of De Witt land, were carefully examined by Captain King, and found to contain many excellent harbours. Prince Regent river was to use Commander King's language "without exception the most remarkable feature of the north west coast of Australia. In general, the inlets of this coast appear to form extensive ports in the distance; and when they begin to assume the character of a river, their course becomes tortuous and very irregular. But Prince Regent river trends into the interior in a south easterly direction for 54 miles, with scarcely a point to intercept the view, after being 13 miles within it." At the fifteenth mile, a ridge of rocks, crossing the river, forms a rapid, above which, the tide does not reach; but here the stream formed a beautiful fresh water river, of limped clearness, and 300 yards in width. About a mile below the rapid, it was joined by an inferior stream, which fell from a height of 140 feet; and though visited in the dry season, this cascade nevertheless had an imposing appearance. The marks of floods were noticed upon the shores of the inlet; and the trunks of large trees were seen thrown up to the height of twelve feet above high water mark.

The loss of all his anchors, together with other circumstances, prevented Commander King exploring the whole of the deep inlets of the north west coast of Australia in a satisfactory manner. He did not attempt however to underrate the importance of the omissions in his chart, or to suggest that no interest attached itself to those parts of the coast he was unable to explore. Exmouth Gulf, another deep inlet bounded on the west by the great peninsula of which North West Cape forms the termination, was left imperfectly explored, which left the advocates of a great Australian river, at that period, amongst geographers, some hope of such a river discharging itself in this vicinity into the ocean.

Captain Wickham, in the *Beagle*, subsequently cleared up this, with other doubtful points left unsolved by Commander King, who had returned to England in 1823.

The results of his Australian undertaking are contained in a "Narrative of the Survey of the Intertropical and Western coasts of Australia," and in an Atlas, both compiled by Captain King, and published, the former by Murray, and the latter by the Hydrographic Office at the Admiralty.

In September 1825, he was appointed to the *Adventure* sloop, and ordered to survey the south coast of America, from the entrance of the Rio Plata round to Chiloe, and the coast of Tierra del Fuego. He sailed in 1826, having under his orders the *Beagle*, Captain P. Stokes, and measured meridian distances between Funchal, Teneriffe, Porto Praya, Rio, Palm Island, Anhatomorim, Valparaiso, San Carlos, Juan Fernandez, and Rio. He carried

eleven chronometers. After arrival in England in November 1830, he was not again actively employed. His Post-commission was dated February 1830.

Captain King compiled a paper entitled Observations upon the Geography of the southern extremity of South America, Tierra del Fuego, and the strait of Magalhaens, made during the survey of those coasts in H.M. Ships *Adventure* and *Beagle*, between the years 1826 and 1830, which was read at meetings of the Royal Geographical Society held the 25th of April and 9th of May 1831, and which will be found published at page 155 of that Society's Journal for the year 1831. Captain R. Fitzroy in a second commission of the *Beagle*, subsequently continued and completed the survey of South America.

In 1834, on his retirement from active service, Captain King returned to Australia and succeeded Sir Edward Parry as manager of the Australian Agricultural Company, the duties of which office, he performed with great ability and attention for many years. He was made a member of the Legislative council, and appointed chairman of the Denominational Board of Education of New South Wales. In 1855, he was mainly instrumental in obtaining a pension for the widow of Captain Flinders from the New South Wales government. He died in 1856, aged 63 years.

The following charts are engraved by the Admiralty from the surveys of Captain King; many of his charts have been superseded, and others added to, by Captain J. L. Stokes, R.N. and other officers.

NORTH AND WEST COASTS OF AUSTRALIA.

Investigator Road to Cape Ford.
Cape Ford to Buccaneer Archipelago.
Cambridge Gulf.
Admiralty Gulf and Vansittart Bay.
Camden Bay to Vansittart Bay.
Buccaneer Archipelago.
Buccaneer Archipelago to Cape Lambert.
Cape Lambert to Cape Farquhar.
Dampier Archipelago.
Exmouth Gulf.

AMERICA SOUTH COAST.

Cape Three Points to Magellan Strait.
Magellan strait.
Second Narrows to Cape Pillar.
Glascott point to Cape San Isidro.
Smyth and Fury harbours &c.
Barbara channel.
Ports on the south side of Tierra del Fuego.
Magellan Strait to Gulf of Penas.

The following works were also published by Captain King.

Narrative of a survey of the Intertropical and Western Coasts of Australia in the years 1818-22. 2 vols 8vo. 1827.

Sailing Directions for the coasts of Eastern and Western Patagonia. 8vo. 1832.
Sailing Directions for the Inner Route from Sydney to Torres Strait. 4to. *Port Stephens*, 1843.
Sailing Directions for the Inner Route (another edition). 8vo, 1847.
Description of the North East Coast of Australia. 8vo.

REAR ADMIRAL SIR JOHN ROSS, Kt. C.B.

1818-33.

Sir John Ross was born in June 1777, at Balsarrock, Wigtonshire, and entered the Navy in 1786, as a first class volunteer, and served in the Mediterranean until 1789, and afterwards in the English channel. Between the years 1791 and 1799, he obtained employment in the mercantile marine, but, in September, of the latter year, returned to the Navy as a midshipman on board the *Ward*, Captain W. D'Urban, under whom he took part in the expedition to Holland. He subsequently served in various ships under Sir James Saumarez.

In 1808, Lieutenant Ross acted as Captain of the Swedish fleet, and was made a Commander in 1812. During his war services he was wounded thirteen times, and received a pension on this account in 1808, of £91. 5s., which was increased in 1815, to £150 per annum.

In 1817, the Admiralty having resolved to attempt to solve the question of the North west passage, Commander Ross was appointed to the *Isabella*, with the *Alexander* commanded by Lieutenant Parry under his orders.

The ships put to sea on the 18th of April 1818. On their arrival on the western coast

of Greenland they found the ice abundant, and the reports of the governor of one of the Danish settlements at which they touched, not of an encouraging nature.

From observations made at the Island of Wygat, it appeared that this part of the coast was erroneously laid down in the charts; the error in longitude in those of the Admiralty, amounting to more than 5°. Having made the circuit of Baffins Bay, the ships returned to England the same season, when Ross was promoted to the rank of Captain. During this voyage the misconception was fallen nto by the Commander, of closing up the head of Lancaster Sound by a range of mountains, named after Mr. Croker, the Secretary of the Admiralty. Red snow was brought home from Baffin's Bay, and submitted to the examination of naturalists and chemists: some pronounced that the colouring matter was of an animal, others of a vegetable, nature; but the question has since been decided in favour of the latter opinion, an extremely minute lichen being supposed to vegetate even upon snow.

During this voyage, great attention was paid to deep-sea investigation, and Captain Ross invented one of the earliest satisfactory instruments termed a "deep-sea clamm" for bringing up a considerable quantity of the bottom-mud in deep water.*

In 1829, aided by the munificence of Mr. Felix Booth, Captain Ross purchased the *Victory*, a steam vessel of 150 tons, to follow up the discoveries already made in the direction of Barrow strait.

The *Victory* sailed in 1829, Commander (afterwards Sir) James Clark Ross, of subsequent Antartic notoriety being second in command. Having visited the wreck of the *Fury*, abandoned by Parry, in Kegent Inlet, the *Victory* reached Cape Gerry in August 1829, and thence proceeded to latitude 70° north, and longitude 92° west, when a barrier of ice compelled her to winter in Felix harbour. During 1830, the *Victory* could only be moved about four miles, and in the following year, merely gained a port fourteen miles further (Victoria harbour), where after another winter, Captain John Ross abandoned his vessel, in May 1832. Exposed to much danger, the party made their way northwards to latitude 74° North, longitude 90° West, but want of provisions, and the approach of winter, obliged them to return to Fury beach, which they reached October 7th, about three years after they had passed it on their outward voyage. Here they lived in a hut, 32 feet long, made from the wreck of the *Fury*, and passed another dreary winter, amid privation and considerable suffering.

On July 8th 1833, Captain Ross and his party made a last effort to escape. Dragging the sick to the boats, they embarked, and crossing the inlet to Cape York, reached a point east of Navy Board Inlet, where they fortunately got on board the whaler *Isabella*, formerly commanded by the gallant Captain himself, and in October they arrived in England.

In the same year, 1833, Captain Ross obtained the gold medal of the Royal Geographical Society, and the gold medal of the Geographical Society of Paris, together with various foreign orders, including that of the Swedish Polar Star. In December 1834, he received the honour of knighthood, together with that of C.B., his patron Mr. Felix Booth being raised to a baronetcy by King William IV.

A committee of the House of Commons, assisted by scientific men, appointed to investigate the results of the expedition, declared that they saw no reason to doubt that Captain John Ross nearly approached, and that Commander James Ross actually reached, the Magnetic Pole.

Obtaining Rear Admiral's rank in July 1851, he died in November 1856, aged 79 years.

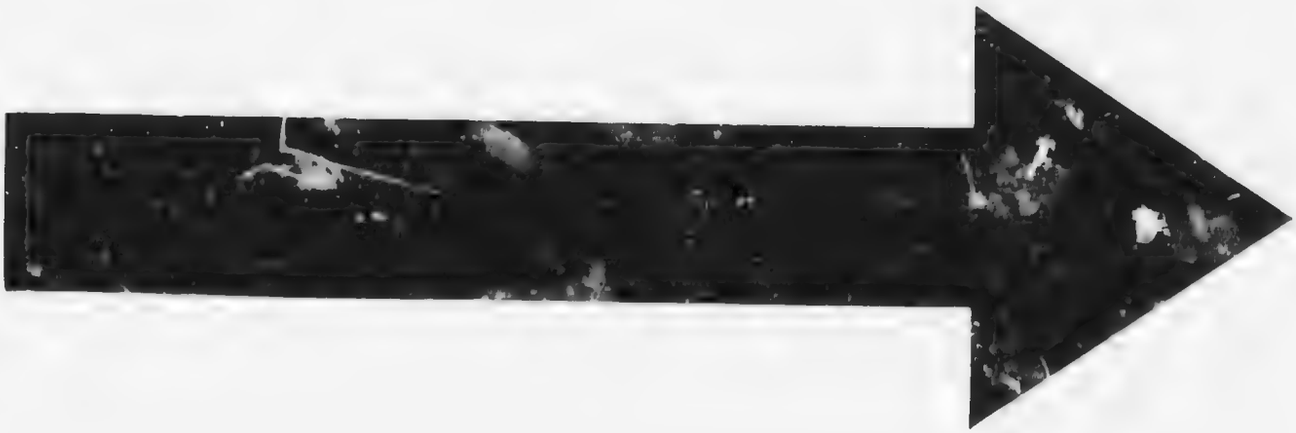
Sir John Ross was the author among other works of

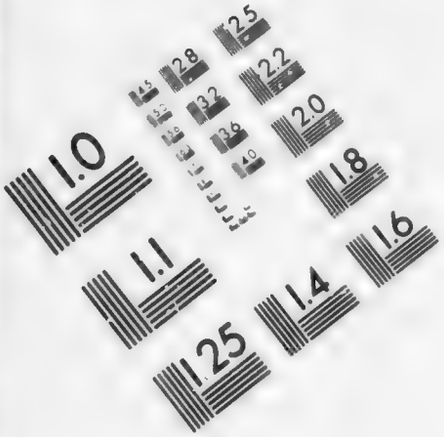
A Voyage of Discovery in H.M. Ships *Isabella* and *Alexander*, in 1818, for the purpose of exploring Baffin's Bay. *4to.* 1819.

Narrative of a second voyage in search of a North West Passage, and of a residence in the Arctic Regions during the years 1829-33; with an Appendix 2*vols*, *4to.* 1835.

Treatise on steam Navigation. *4to.* 1828.

* On the 6th of September 1818, he sounded in latitude 72° 23′ N., longitude 73° 7′ W., in 1020 fathoms, from which depth the instrument brought up 6 lbs. of very soft mud.





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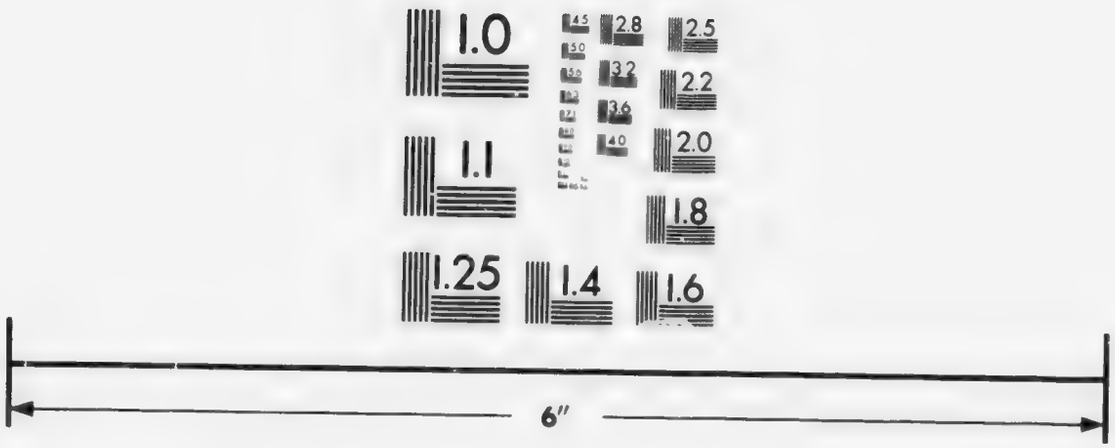

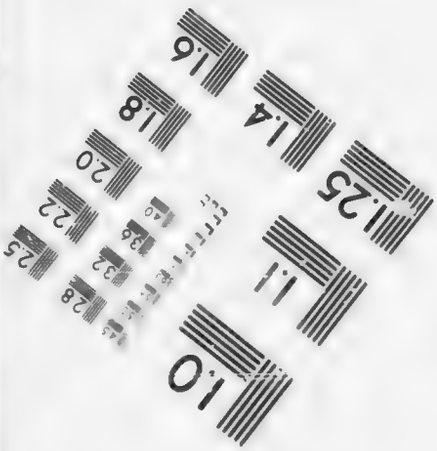

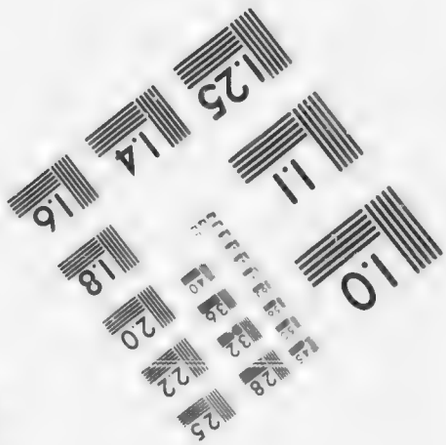

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On Steam Communication to India by the Cape of Good Hope. 8vo, 1838.
On the Deviation of the mariners compass. 8vo. 1849.
Deep Sea Clamms. 8vo.
Letters to young Sea Officers.
Memoirs and Correspondence of Admiral Lord de Saumarez.
Memoir of Admiral Krusenstern. 8vo. 1856.

CAPTAIN SIR JOHN FRANKLIN, K.C.H., F.R.S., D.C.L.

1819-48

Sir John Franklin born in 1786, at Spilsbury, in the county of Lincoln, entered the Navy on the 1st of October 1800, as a Boy, on board the *Polyphemus*, Captain Lawford, under whom he served as a midshipman in the action off Copenhagen of the 2nd of April 1801.

He then sailed in the *Investigator*, Commander Matthew Flinders on a voyage of discovery to the north and north east coasts of Australia, and materially assisted in the surveys made during that eventful voyage. Upon the *Investigator* being found unseaworthy, he formed one of that portion of the officers who embarked in the *Porpoise*, Lieutenant Commander R. M. Fowler, which was wrecked on the 17th of August 1804, on Wreck reef, near the Cato bank, eight days after leaving Port Jackson. After returning to that port, he appears to have again sailed by way of the East Indies for England, and while on board the *Earl Camden*, Captain N. Dance, the commodore of sixteen sail, Mr. Franklin distinguished himself at the repulse of a French squadron under Admiral Linois, February 15th 1804.

On arriving in England, he joined the *Bellerophon* 74, and subsequently under Captain Cooke took part in the battle of Trafalgar, superintending the signals of that ship during the engagement.

He was then transferred to the *Bedford*, Captains A. Mackenzie and J. Walker, of which ship he was confirmed in the rank of Lieutenant on the 11th of February 1808. During the latter part of the war he was chiefly employed at the blockade of Flushing; at the close of 1814 joining the expedition to New Orleans.

On the 14th of December 1814, he was slightly wounded, while leading the boats of the *Bedford* in company with those of a squadron, at the capture, on Lake Borgne, of five American gun-boats under Commodore Jones, which did not surrender until after a desperate conflict.

During the attack on New Orleans he assisted in cutting a canal across the neck of land between the Bayou Catalan and the Mississippi; and for his conduct on the morning of the 8th of January 1815, when he commanded the small-arm men under Captain R. Money at the defeat of a body of Americans, he was officially recommended for promotion.

After serving for a short as first lieutenant of the *Forth*, he took command on the 14th of Jauuary 1818, of the hired brig *Trent*, in which he accompanied Captain David Buchan of the *Dorothea* on a voyage of discovery to the neighbourhood of Spitzbergen.

In April 1819, having paid off the *Trent* in the preceding November, he undertook charge of an expedition for ascertaining the actual position of the mouth of the Coppermine River, and the trending of the North American shore eastward of that river. His companions were Dr. Richardson, Mr. Hood, (brother of the officer who lost his life during the African survey under Captain Owen) and Mr. (subsequently Sir George) Back, midshipmen, and two English seamen. They embarked at the end of May 1819, and arrived in safety at York Factory on the shores of Hudson's Bay, on the 30th of August. On the 9th of September, the journey commenced from York Station, and on the 22nd of October, the explorers arrived at Cumberland House; a distance of 690 miles.

On the 18th of January 1820, Captain Franklin and Mr. Back, set out for Fort Chepeweyan, near the western extremity of Athabasca Lake, in order to personally superintend the preparations for the journey of the ensuing summer, and arrived at the Fort on the 26th of March; thus performing a journey of 857 miles in the very depth of an arctic winter.

As soon as the spring began to appear, Dr. Richardson and Mr. Hood set forward to

join their companions at Fort Chepeweyan, arriving in due course, and on the 18th of July 1820, reaching latitude 64° 28′ N., longitude 113° 6′ W., where Fort Enterprise was built on the bank of Winter River, the distance from Chepeweyan being 550 miles.

Here the party wintered with the exception of Mr. Back, who, on account of provisions running short, returned with some Canadian and Indian attendants to Fort Chepeweyan.

On the 18th of July, the expedition reached the mouth of the Coppermine River, and the north coast of America was successfully traced, in two bark canoes, as far as Point Turnagain, in latitude 68° 30′ N. This point on the east, with Cape Barrow on the west, formed the opening of a deep gulf that ran southward as far as the arctic circle. It was called by Captain Franklin, Coronation gulf, and the river at its head Hood's river. They ascended this river for some little distance, but being stopped by a cascade 250 feet in height, were obliged to return on foot. After great sufferings, thanks to Mr. Back, to whose resolution and physical strength the expedition owed its ultimate safety, the party arrived at Fort Enterprise, where relief was eventually obtained, with the exception of Mr. Hood, who lost his life by the hand of Michel, an Iroquois ; Michel was shot in consequence.

The results of this journey, which, including the navigation along the coast, amounted to 5,500 miles, proved of the greatest importance to geography. In travelling through the valleys which separate the Copper Mountains, Dr. Richardson picked up some plates of native copper ; and ice chisels, formed of pure copper, were afterwards found among the Esquimaux.

Franklin was made a Commander on the 1st of January 1821, and a post Captain November the 20th, 1822.

The "Second Expedition" of Captain Franklin, left England February 16th, 1825, its object being to survey the coast westward of Mackenzie river. It consisted of Captain Franklin, Dr. Richardson, Mr. Back, and Mr. Kendall. Their instructions directed them to winter near the Great Bear Lake, and in the spring of 1826, to proceed down the Mackenzie River. At the mouth of this river, they were to separate, Captain Franklin and Mr. Back to go westward, and endeavour to reach Kotzebue Inlet, where they were expected to meet the *Blossom*, under Captain Beechey ; Dr. Richardson and Mr. Kendall were to proceed to the east, to examine the coast between the Mackenzie and Coppermine Rivers.

Proceeding by way of New York, Niagara, and Lake Superior, they overtook the boats in which they were to descend the Mackenzie in Methy River, or in latitude 56° 10′ N., longitude 108° 55′ W. The party dividing, Captain Franklin and Mr. Back proceeded to the mouth of the Mackenzie, which they surveyed, while Dr. Richardson and Mr. Kendall investigated the Great Bear Lake.

On the 5th of September 1825, all met at their winter residence on Great Bear Lake, which was called Fort Franklin. In the spring of 1856, after the completion of the survey of the Great Bear Lake by Mr. Kendall, the whole party embarked in boats, and proceeded successfully to the mouth of the Mackenzie. On the 4th of July 1826, at the fork, where the principal mouths of the Mackenzie branch off east and west, called Point Separation, the parties according to the original instructions, divided, and started west and east. Dr. Richardson and Mr. Kendall, to whom the eastern journey had been allotted, successfully traced the coast as far as the mouth of the Coppermine River, without mishap, (for memoir of services of Lieutenant E.N. Kendall see the index of this work).

Captain Franklin with Mr. Back, continued westward towards Kotzebue Inlet, past Herschel island and the Clarence and Canning rivers, the former of which divides British and Russian territory in about longitude 141° W., as far as Return Reef near Cape Beechey, in latitude 70° 25′ N., longitude 148° 52′ W., which was reached August the 18th 1826; at which time, they were about 146 miles from the farthest point reached by Mr. Elson the Master of the *Blossom*, on the 22nd of the same month, in that vessel's barge, and 374 miles westward of the Mackenzie River.

Winter was rapidly approaching, and the temperature at noon rarely exceeding 37°,

Captain Franklin resolved to return immediately, rather than expose the lives of his followers in a hopeless enterprise.

On the return voyage Peel river, was discovered, and on the 21st of September, Fort Franklin was reached, the distance accomplished in the three months of absence being 2048 miles.

On the return of the expedition to England on the 26th of September 1827, he was presented by the Geographical Society of Paris with a gold medal. On the 29th of April 1829, he received the honour of knighthood; in July, he was made a D.C.L. of Oxford.

From the 23rd of August 1830, until paid off in January 1834, he commanded the *Rainbow* in the Mediterranean, and for his services in connection with Greece, received the Order of the Redeemer of that country.

On the 35th of January 1836, he was made a K.C.H., and was afterwards for some time appointed governor of Tasmania.

The "Third Expedition" under Sir John Franklin in search of a N.W. passage, left Greenhithe on May the 24th, 1845. It consisted of the *Erebus* and *Terror*, Captains Crozier and Fitzjames, carrying 131 persons in all. The last despatches from them, were from Whalefish Islands, dated July 12th, 1845. Their protracted absence caused intense anxiety, and between the years 1848 and 1865, no less than eleven public, and ten private expeditions (the latter chiefly at Lady Franklin's expense) were sent from England and elsewhere, in quest of the missing explorers, to various parts of the polar regions.

Numerous accounts, more or less illusory, of the expedition were received, derived principally from native sources.

H.M. Government, on March 7th 1850, offered a reward of 20,000l, to any party of any country, that should render efficient assistance to the crew of the missing ships. Sir John Franklin's first winter quarters were found at Beechy Island, by Captains Ommanney and Penny.

Captain Sir Leopold M'Clintock R.N., in the *Fox*, equipped by Lady Franklin aud her friends, forming the eighteenth British expedition devoted to this search, left Aberdeen July 1st 1857, and returned September 22nd 1859.

Lieutenant Hobson found at Point Victory, near Cape Victoria, besides a cairn, a tin case containing a paper, signed April 25th 1848, by Captain Fitzjames, which certified that the *Erebus* and *Terror* were beset on September 12th 1846, in latitude 73° 5′ N., longitude 98° 23′ W., that Sir John Franklin died June 11th 1847; and that the ships were deserted April 22nd 1848.

Captain M'Clintock continued the search, and discovered skeletons and other relics. His journal was published in December 1859; and on May 28th 1860, gold medals were presented to him and Lady Franklin by the Royal Geographical Society.

In 1879, Lieutenent F. Schwatka, an American officer, made a sledge journey in quest of information concerning the fate of the Franklin expedition, travelling upwards of 3000 miles in eleven months. He succeeded in finding further relics of that expedition, including parts of a sledge, clothing, portions of a boat &c. These were presented to the British Government in the spring of 1881, and were for some days displayed in the Hydrographic Department of the Admiralty. and have since been presented to the museum of the United Service Institution.

Admiral Sir George Richards, himself an Arctic Explorer under Sir Edward Belcher, in commenting upon Lieutenant Schwatka's journey, remarked it to have been one of the most extraordinary sledging feats ever accomplished, or words to that effect.

Sir John Franklin published as the results of his first and second expeditions.

Narrative of a Journey to the shores of the Polar Sea in the years 1819-22, with an Appendix by Sir John Richardson, Lieutenant Hood, and J. Sabine. *4to*, 1823.

Narrative of a second Expedition to the shores of the Polar Sea in 1825-27, including an Account of the Progress of a Detachment to the eastward by Dr. John Richardson. *4to*, 1828.

L. FITZMAURICE ESQ., MASTER R.N.

1816.

The first information obtainable concerning the surveying services of Mr. Lewis Fitzmaurice, who was a Master of the 19th of May 1811, is that he was appointed as maritime surveyor to the ill-fated Congo expedition under Captain Tuckey, which sailed from England in February 1816, having previously, about the year 1814, made a survey in the neighbourbour of Algoa bay.

The transport *Dorothy* which accompanied the schooner *Congo* to the river of that name was intrusted to the command of Mr. Fitzmaurice. He carried in her the various presents for the native chiefs, as well as specially constructed boats for the expedition, extra provisions &c.

Mr. Fitzmaurice corrected the chart of the west coast of Africa between cape Lopez and the mouth of the Congo, and having anchored the *Dorothy* at the Tall Trees anchorage, continued in the vessel *Congo* and boats, and afterwards overland with Commander Tuckey. He fortunately escaped any serious attack of the fever, which proved so fatal to almost the whole of the remainder of the officers of the expedition, of which he was the senior survivor.

The chart of the river Congo which accompanies the narrative of the expedition was constructed by him, the lower part of that river from the mouth to Embomma having been corrected from Maxwell's chart; from thence to the Narrows at Nomaza cove, where the *Congo* was anchored, being the results of his own survey, and from Nomaza cove to the extreme point explored, from a sketch by Commander Tuckey.

Appendix No VII of the Narrative, comprising Hydrographical Remarks upon the coast from the island of St. Thomas to the mouth of the Zaire or Congo, is from the pen of Mr. Fitzmaurice.

Upon returning to England in the *Congo*, he was permitted to continue in command of that vessel by the recommendation of Captain Hurd, the Hydrographer to the Admiralty, and employed in surveying parts of the North Sea, and of Ireland, in her, and afterwards in the brig *Hasty* until the year 1834. He died at the latter end of 1849.

Mr. (afterwards Captain) G. A. Frazer who served during the earlier part of his surveying career under Mr. Fitzmaurice, acted as that officers assistant in surveying Milford Haven.

His son Lewis R. Fitzmaurice, who was born during his fathers absence upon the Congo expedition, subsequently became a lieutenant, and acted in the capacity of Assistant Surveyor to Captains Wickham and John L. Stokes on board the *Beagle*, during the surveying expedition to the south coast of Australia, between the years 1837 and 1843.

The following manuscript charts were amongst those made from the surveys of Mr. Fitzmaurice.

Bird islands, Doddington rock and adjacent coast (S. Africa), 1814.
Part of the River Congo, 1816.
Amsterdam island (Curacoa).
Sabrina island (St. Michaels).
Burford Bank (Dublin bay)
Milford Haven, 1832 (drawn by Mr. G. A. Frazer).
Ithaca Island (Ionian Islands).

ADMIRAL ROUSSIN, (French Navy).

1817–20.

This officer after obtaining much distinction in the French Navy about the time of the first Napoleon, was afterwards employed on a hydrographic survey of the coast of Brazil.

In 1818, he proceeded with the corvette *La Bayadere*, accompanied by the brig *Le Favorite*, to undertake the examination of the South American coast between St. Catherine island and the Amazons. He took with him two chronometers, the temperature of which, was kept at 30° *Centigrade*, by means of a lamp. Passing between Cape de Verde islands and the coast of Africa, he called at St. Sebastian island, Rio de Janeiro, Bahia, the banks off

Cape St. Thomas, Espiritu Santo, Abrolhos, Pernambuco, Ceara, arrived at Maranham, January 1820; thence to Cayenne.

In 1817, 1818, with M. Givry,* Ingenr. Hydrographique he made two voyages in *La Bayadere* to the coast of Africa, surveying from Cape Bojador to the Isles de Los (these positions were afterwards corrected in a French chart, 1828). A Nautical Memoir was published of this voyage, in French, in 1827, and translated for the use of the ships of the British Navy by Lieutenant James Badgley, a surveying officer of some distinction, who served with Captain W. F. Owen on the coast of Africa.

In 1821, Admiral Roussin commanded a small squadron on the coast of Brazil, and French Guiana, in one of which, the *Clorinde*, M. L'Artigue served, adding considerably to the hydrography of that part of the world.

Memoire sur la Navigation aux Cotes Occidentales d'Afrique, depuis le Cap Bojador jusqu'au Mont Sonzos. 8vo, *Paris* 1827.
Navigation aux Cotes du Brésil. 8vo. Paris 1821. Atlas folio, Paris 1826.
Le Pilote du Brésil, ou Description des Cotes de l' Amerique Méridionale. 8vo. *Paris* 1827.
Another Edition with folio Atlas. *Paris* 1845.

J. F. DESSIOU ESQ., (Master R.N.)

1818–1838.

Joseph Foss Dessiou was a master of the Royal Navy of the 24th of August 1805. He appears as far back as 1808, to have been engaged in constructing charts, and had evidently paid close attention to hydrography, whenever his professional duties permitted the opportunity. Having been reported physically unfit for further service afloat, he would seem to have applied himself more especially to the discussion of tidal phenomena.

In Sir John Lubbock's report on tidal observations published in the Philosophical Transactions of the year 1836, he fully describes how the data upon which the Admiralty Tide Tables were based, had been obtained, and that the semi-monthly inequality for each place, with the establishment, was found by Mr. Dessiou.

The Nautical Magazine also remarks concerning the same officer "We have much pleasure in recording our testimony of the laborious exertions of this gentleman on the subject of tides. It is about six years since this subject so important to seamen, was taken up by those eminent philosophers, Mr. Lubbock and Professor Whewell; and an immense mass of calculations, to prove the various parts of their theories, have been made by Mr. Dessiou, which do infinite credit to this gentleman, and show him as devoted to the interests of his profession in his latter years on shore, as he was in his earlier years afloat." †

The first volume of Admiralty Tide Tables was published and issued in 1833. The ports for which the tides were calculated were Plymouth, Portsmouth, Ramsgate, Sheerness, and London. Captain John Washington in his able report as Secretary of the Royal Geographical Society in the year 1838, remarks on this subject "Exact registers of the tides, the valuable researches of Messrs Whewell and Lubbock published in the Philosophical Transactions, entitle them to the gratitude of all physicial geographers; but voyagers and travellers in whatever part of the maritime world they may chance to be, can materially assist these eminent men in their researches by accurately registering the times of high water daily, for a whole lunation, and the heights if convenient: the former is the principal object.

Mr. Dessiou's name was more closely connected with the tides of the Port of Liverpool, where he found the diurnal inequality very considerable. He compiled several charts, principally of the West Indies and English coast, for the Hydrographic Department, and he also edited the following,

Directions for Navigating throughout the English Channel. 8vo, 1816.
Sailing Directions for the coast and harbours of Brazil. 8vo, 1818.

* M. Givry, in an octavo pamphlet, published a Discussion on the Geographical positions determined under Admiral Roussin by L'Artigue in 1821, 22, 23.

† Nautical Magazine for 1836, Vol, 5 p. 623.

CAPTAIN HELL (French).

1819–25.

The above officer, who was a Capitane de Vaisseau in the French Navy, between the years 1819 and 1825, made a detailed and elaborate survey of the Island of Corsica, in which he was assisted by Messrs Deloffre, Matthieu, and Allégre.

In 1831, the French Government published a Book of Sailing Directions for the Island of Corsica, and in the same year the Hydrographic Office of the British Admiralty, engraved and issued a chart of the Island of Corsica, with plans taken from the French charts made from the surveys of Captain Hell.

CAPTAIN BELLINGSHAUSEN (Russian)

1819–21.

In 1819, the sloops *Vostok* (Eastern), and *Mirnay* (Peaceful), were equipped at Kronstadt under Captain Bellingshausen for a voyage of discovery. They first sailed for England, where the final scientific preparations necessary for such an expedition were made, from whence they continued to Teneriffe and Rio de Janeiro. After staying some time at the latter port, on the passage to Port Jackson, the *Vostok* rounded the south side of South Georgia Island, sighted the Traverse Islands, and passed along the east coast of the Sandwich group (of the South Atlantic). In the course of the navigation of the Antarctic, the *Mirnay* became separated from her consort, but made no discovery of importance, the vessels again meeting at Port Jackson, where a considerable stay was made.

Sailing from Port Jackson for Queen Charlotte Sound of New Zealand, the South Pacific Ocean was navigated to Tahiti, in the course of which, some islands to which the name of the Russian Islands was given, were considered owing to the error of their position upon the charts, a new discovery by Captain Bellingshausen.

The islands of Vostok, and Bellingshausen were discovered after leaving Tahiti, as well as Ono island and Michaeloff and Simanoff of the Fiji group; the two latter receiving the names of the naturalist and artist of the expedition.

After a short stay at Port Jackson, during which, information upon Australia and Tasmania was obtained, on the 31st of October 1820, the expedition again sailed for the South Polar regions, crossing the sixtieth parallel of south latitude in longitude 163° E., and sailing eastward between the parallels of 64° and 68° S., as far as 93° West longitude.

On the 9th of January 1821, the ships attained the highest southern latitude made during the voyage, that of 70° south, a short distance eastward of where Captain Cook had succeeded in reaching his highest southern latitude.

Peter the First Island was discovered in latitude 69° 30′ S., longitude 90° W., (this is termed Petra Island upon English charts). Fifteen degrees further to the eastward, in about the same latitude, Alexander Island was discovered at a distance of about 200 miles south westward of Graham Land, to which Captain Bellingshausen considered it was attached.

Admiral Krusenstern, the Russian Hydrographer, was of opinion, that Peter the First Island, as well as Alexander Island, formed part of a continuation of Graham Land.

After this, the expedition sailed south of the South Shetland Islands, past South Georgia, sighting islands, to which were given the names of Merduinoff, Shishkoff, and Roshnoff.

Continuing to Rio de Janeiro, after a brief stay, course was steered for Europe, Lisbon called at, and Kronstadt returned to in 1821.

The results of this expedition were published in two ... volumes, in the Russian language in 1825, with an Atlas containing numerous charts and illustrations of the hydrography, natural history &c., accruing from the voyage.

THE REV. DR. WILLIAM SCORESBY.

1820–1857.

A man eminently entitled to be singled out, as a most remarkable voyager, as well as

a scientific observer and accurate writer was William Scoresby. At the early age of ten years he commenced his career as a seaman under the auspices of his father, one of the most successful captains of the port of Whitby, in the Northern whale fishery. Thus early inured to the hardships and perils of the Arctic Seas, his mind was developed by the employment of the winter months in pursuing a course of study at the University of Edinburgh, where he gained the friendship of the professors, and laid the foundation of that knowledge which enabled him subsequently to offer so clear an account of the Arctic regions.

As chief mate of his father's ship, the *Resolution*, he navigated to the highest latitude then attained by any vessel, viz. 81° 30'.; and though Sir E. Parry, in his celebrated boat expedition, during his fourth voyage, in 1827, arrived at 82° 45', the distinction of being second in the approach to the North Pole, until recently, remained with Scoresby and his father.

In 1820, in two volumes, appeared the result of 17 years experience in the Arctic Seas, containing besides a vast amount of statistical information, such a mass of scientific observation, as to render it still a text-book of nautical science. "It has been said of him, "That of all the navigators who have combined with the due discharge of their duties as sailors, the scientific investigation of the conditions of the ocean, Scoresby is certainly the one most imbued with the spirit of the philosopher. The problems to be solved, seem to present themselves at once to his mind divested of all irrelevant matter, and he attacks them directly and successfully. After showing how, from observation of the whale fishing he had often been able to draw correct conclusions as to the depths of water, seeing the amount of line which the whales would take out when running perpendicularly downwards, he relates the following remarkable incident, from the log-book of his father.

On the 31st of May 1749, the chief mate of the *Henrietta*, the ship my father commanded, struck a whale, which 'ran' all the lines out of the boat before assistance arrived, and then dragged the boat under water, the men meanwhile escaping to a piece of ice. When the fish returned to the surface to 'blow' it was struck a second time, and soon afterwards killed. The moment it expired, it began to sink, which, not being a usual circumstance, excited some surprise."

After securing the whale, they set about the recovery of the sunken boat which had been dragged down with the whale when first struck, and was still attached thereto.

"My father imagining that the sunken boat was entangled among rocks at the bottom of the sea, and that the action of a current on the line produced the extraordinary stress, proceeded himself to assist in hauling up the boat. The strain upon the line he estimated at $\frac{3}{4}$ of a ton, the utmost power of 25 men being requisite to overcome the weight. The laborious operation of hauling the line in, occupied several hours, the weight continuing nearly the same throughout. The sunken boat, which, before the accident, would have been buoyant when full of water, when it came to the surface, required a boat at each end to keep it from sinking. When it was hoisted in to the ship, the paint came off the wood in large sheets, and the planks were as completely soaked in every pore, as if they had lain at the bottom of the sea since the Flood. The boat was rendered useless; even the wood of which it was built, on being offered to the cook as fuel, was tried, and rejected as incombustible."

This is interesting as being, perhaps, the first occasion on which the effect of the enormous pressure produced by a column of water was directly observed. It is noticeable that the wood, though painted, got completely water-logged, while the whale which must have penetrated to the same depth, retained its buoyancy.

In 1822, Captain Scoresby succeeded in reaching the east coast of Greenland, of which, with indefatigable labour, he made a running survey, from the 70th to the 75th degree of latitude, and which, taking in the bays and fiords, comprised a coast line of 800 miles, or from

* Journal of the Society of Arts for March 1881, p. 320.

Knighton bay to Gale Hawk land was defined correctly, and errors found in previous charts, amounting to no less than 7° of longitude.

The voyage was accomplished in the ship *Baffin*, of 321 tons, built at Liverpool in 1820, expressly for the whale fishery, under Captain Scoresby's immediate supervision. In addition to the hydrographic and whaling results of the voyage, endeavour was made to gain traces of the Norwegian colonists, formerly said to have migrated in company with Icelanders to the east coast of Greenland. In the introduction to the narrative of this voyage of 1822, Captain Scoresby has collated the various ancient and other accounts bearing on this subject, and from such traces as were found of former civilization on these shores he evidently leans to the belief, that such colonies had certainly at one time existed, if not flourished on this part of the coast of Greenland. *

Captain Scoresby in the course of his survey named the various sounds, islands, capes, and inlets, on the east coast of Greenland, between 70° and 75° N., after eminent geographers of that period, such as Franklin, Parry, Basil Hall &c. The instruments employed in this survey consisted of azimuth compasses, sextants, and a chronometer. Fifty stations were fixed astronomically, and numerous angles taken, as well as true bearings for ascertaining the compass errors. During boisterous weather, when the vessel was so unsteady as to prevent the employment of the azimuth compass in the crow's nest, all requisite angles were taken with a sextant, and the bearings derived from them, by connecting one of the series by angular distance from the sun. The longitudes were ascertained by chronometer.

Throughout these laborous operations, Captain Scoresby was unaided, and judging from the appearance of the chart of this part of the coast of Greenland which illustrates his work, as well as by the trouble he takes to distinguish the parts on which most reliance can be placed from the remainder, the survey appears of a most praiseworthy, if not of quite a professional nature.

Remarks on storms of this region, on mineralogy, botany, zoology, and meteorological tables, are also included in this work, which is dedicated by permission to King William the Fourth.

In the course of a visit to Jan Mayen island, afterwards visited by Lord Dufferin, Captain Scoresby detected remarkable proofs of the set of the equatorial current. He found on the shores of that singular island, pieces of drift wood, bored by a ptenus or pholas, neither of which animals ever pierce wood in Arctic countries, and hence he concluded that the worm-eaten fragments had been drifted hither by the currents from a transpolar region.

He was the first to attempt observations on the electricity of the atmosphere in high northern latitudes, and his experiments made with an insulated conductor, eight feet above the head of the main-top-gallant mast, connected by a wire with a copper ball, attached by a silken cord to the deck, may be still regarded with interest for their novelty and ingenuity.

The collection of scientific data was never permitted to interfere with the main objects of the voyage, in the pursuit of which he was most successful, and notwithstanding his resolution that the sanctity of the Sabbath should not be violated by the pursuit of the whale, his ship usually returned the best filled of the season.

Abandoning nautical pursuits in 1823, Scoresby gave a fresh and remarkable proof of his unbounded energy and great ability, by mastering the difficulties attendant upon the adoption of the career of a divine. Setting to work with the assiduity of youth, he graduated at Queen's College, Cambridge, as B.D., in 1834, and was inducted to that Church of England of which he became a distinguished ornament. He devoted many years of

* In the Journal of the R. G. Society for 831, p. 247, is an account of the expedition of Captain Graah of the Danish Navy, made in 1829, for the purpose of shedding light upon the former colonization of Greenland, communicated by Captain Zahrtmann, the Hydrographer Royal at Copenhagen, to Captain Beaufort. Although considered by Captain Zahrtmann as conclusive, he remarks "that the matter appears still to admit of plausible reasoning on both sides."

his life to the arduous duties of a chaplain among seamen, whose religious welfare he most zealously promoted, at the same time he continued to take the deepest interest in Arctic exploration, considering that although the efforts to find a north west passage to the China Sea might prove unprofitable for political or commercial objects, that the scientific results justified all the risk and expense of such expeditions.

Scoresby became a Fellow of the Royal Society in 1824, and subsequently was elected a Correspondent of the Section of Geography and Navigation of the French Academy of Sciences. He contributed to the Edinburgh Philosophical Journal, and various periodicals, papers on scientific subjects. To observations on magnetical phenomena he devoted close attention, and his investigations published between 1839 and 1848, in the concluding volume of the latter year, contain a vast amount of valuable materials.

His reports to the British Association, and his observations on the influence of the iron of vessels on the compass, were connected with inquiries of the utmost practical importance to navigation. It was in prosecuting these researches, and with a view to determine various questions of magnetic science, that Dr. Scoresby undertook a voyage to Australia, from which he returned in 1857, with his constitution much enfeebled by the arduous labours he had undergone. He died in 1858.

The following were the principal amongst his publications.

Account of the Arctic Regions, with a History and Description of the Northern Whale Fishery. 2 vols, 8*vo* Edinburgh 1820.

Journal of a voyage to the Northern Whale Fishery, including Researches on the coast of West Greenland made in the summer of 1822. 8*vo*. Edinburgh 1823.

Discourses to seamen. 12*mo*. 1831.

Magnetical Investigations. 8*vo*. 1844.

Zoistic Magnetism. 8*vo*. 1849.

The Franklin Expedition, or considerations on measures for the discovery of our absent adventurers in the Arctic Regions. 8*vo*. 1850.

On the Compass in iron ships. 8*vo*. 1855.

Illustrations of the Magnetism of Iron ships. 8*vo*. 1856.

Journal of a voyage to Australia and round the World for Magnetical Research; *edited by Archibald Smith*. 8*vo*. 1859.

CAPTAIN BRUCKS (H. E. I. C. S.)

1820–30.

Captain Brucks who had been at sea ever since he was eleven years of age, had completed 16 years service in the Bombay Marine, when in 1820, the survey of the Persian Gulf was commenced under Captain Guy in the *Discovery* of 268 tons, and he was selected to command the brig *Psyche* as that officers assistant. Guy retired after having examined the Arabian side up to the head of the Gulf.

Captain Brucks now succeeded to the charge of the work; though an excellent sailor, from the nature of his early training he could hardly be termed a scientific surveyor; but he had under him Lieutenants Haines, Kempthorne, Cogan, Pinching, Ethersey, Whitelock, and Lynch, all men of scientific and literary attainments, while the charts were constructed with great taste and ability by Lieutenant Houghton, who was afterwards draughtsman to the Indian Navy at Bombay.

It must not be forgotten writes the author of the memoir of the Indian Surveys from whence this sketch is extracted "that surveying was but a small part of the work of the Indian Navy. The influence of England in the Persian Gulf was exercised to suppress piracy and extend commerce, to maintain the *status quo* of the chiefs, to exclude foreign influence, and to root out the slave trade. The successful invasion of Persia in 1856, is amongst the more recent operations of the Indian Navy. The naval head-quarters in the Persian Gulf were at Bassadore (Bāsīdu), in the island of el-Kish'm, where there was a hospital on shore, a bázár, five or six private houses, a billiard room, and a fives court.

The survey occupied ten years, from 1820 to 1830. The results are given in 14 charts. Captain Brucks endeavoured to give his work a trigonometrical basis, and always

observed on shore with an artificial horizion, because the refraction was so great as to make it useless to observe with the natural horizion

But in fact, only a portion of the survey was trigonometrical, and the bases depended upon measurement from ship to ship by sound. The remaining portion was merely a running survey, verified to some extent by astronomical observations. There was also some confusion in the longitudes. One half of the survey was referred to the meridian of Bassadore, which was fixed by chronometric measurement from Bombay; but, in those days, Bombay was 7 miles too far to the east. The other half of the survey was calculated from Bushire, the longitude of which had been correctly fixed by Mr. Rich, a former Political Resident, of high scientific attainments. *

At the same time, this old survey of the Persian Gulf reflects credit on those who executed it, when the imperfection of their instruments, and the difficulties they had to overcome are taken into consideration; as well as the fearful climate, the hostility of the Arab tribes, and the vast amount of work done. Guy and Brucks were both invalided, besides junior officers. Captain Brucks returned to England in 1842, and died in 1850. He was for some years employed in preparing a history of the Indian Navy, but the papers collected by him on the subject have never been published.

We have, as results of the old Persian Gulf survey, a "Memoir descriptive of the Navigation of the Persian Gulf," being sailing directions by Captain Brucks himself; notes made by Lieutenant Kempthorne on the identification of places touched at by Nearchus; on the ancient commerce of the gulf, and on a visit to the ruins of Tahiri, which he successfully identified with the missing old Muhammedan city of Siraf; † and three papers by Lieutenant Whitelock, one being a description of the islands at the entrance of the gulf, another an account of the Arabs on the pirate coast, and the third a narrative of a journey in 'Omân. ‡

Of the charts of Captain Brucks, the following were published by the Admiralty:

Muscat to Ras Goberindee
Ras Goberindee to Ras Soaote
} Coast of Arabia.

Persian Gulf, general chart, 2 sheets
El Katiff anchorage
Entrance to the rivers at the head of the Persian Gulf.
Ras Tuloop to Bushire
Bushire to Bassadore
Clarence strait
Kooe Mubarrak to Kurrachee
} Persian Gulf.

CAPTAIN BASIL HALL, R.N., F.R.S.

1816–24.

A complete account of the voyage of the *Lyra*, which accompanied the *Alceste*, in Lord Amherst's mission to China and Loo-choo, was written by her Commander, Captain Basil Hall. Though not a surveying officer himself, he, like the late Commodore Goodenough, took every opportunity of adding to our hydrographical as well as general knowledge, regarding of the various countries he visited.

After parting company with the *Alceste*, February 9th, 1817, the *Lyra* proceeded to Calcutta, Madras, and Mauritius, and after a prosperous voyage round the Cape of Good Hope, touched at St Helena, where Captain Hall was favoured by a special interview with Napoleon Buonaparte, who had been personally acquainted with his father Sir James Hall, the

* The manuscript memoranda and maps of Mr. Rich were presented to the Geographical Department of the India Office, by Mr. Claude Erskine, in 1877.

† R. G. S. Journal, Vol. 3, p. 263. Bombay G. S. Journal, Vol. 1, p. 294.

‡ R. G. S. Journal, Vol. 8, p. 170. Bombay G. S. Journal, Vol. 1, p. 294.

President of the Royal Society of Edinburgh, and had passed some time at the military college at Brienne, where Napoleon was educated, to use whose own words, "Captain Hall's father was the first Englishman he remembered having seen."

The *Lyra* reached England and was paid off in October, 1817.

The testimony of Captain Hall as to the value of the labours of East Indian hydrographers, quoted from page 73 of his work, is well worthy of repetition. In speaking of the passage of the *Alceste* and *Lyra* up the Canton River, he says,

"An admirable chart of the river had been constructed shortly before this period, by Captain Daniel Ross, a gentleman to whom the navigators of every nation, whose business leads them to the Eastern Seas, are indebted in the highest degree.

The East India Company have the sole merit, and a very high one it is, of having originated the splendid idea of surveying in a scientific manner, not only the vast seas and coast of China, but all the straits, bays, and islands in the Indian Ocean and Malay archipelago. This work, perhaps the most useful, and certainly the greatest of its kind that any nation ever undertook, has been carried on at an enormous expense for many years, under every circumstance of peace or war. To many persons, this language may seem too strong; but I write without exaggeration, at the dictation of feelings which most people will be ready to make allowance for.

In the open sea, in broad daylight, and in fine weather, nothing can be more delightful than sailing along on such a voyage as ours, to visit strange countries. But when the scene is changed to a dark and stormy night, in narrow rocky passages, with rapid tides sweeping through them, the blessing of such directions as those of Horsburgh, is felt in a manner that the gentlemen of England, who live at ease, can form but faint conception of."

The second voyage of Captain Basil Hall, in H.M.S. *Conway* was made during the years 1820–21–22, to the coasts of Chili, Peru, and Mexico. With him as master's mate, sailed Mr. Henry Foster, who afterwards as a Lieutenant accompanied Captain Parry on the voyage in quest of a North West passage of 1824-25, as Astronomer and Assistant Surveyor, and became a fellow of the Royal Society at a remarkable early age; to his share fell most of the pendulum experiments undertaken in the *Conway*.

Lieutenant A. B. Beecher acted as hydrographer to the expedition, and Captain Hall tenders his thanks, also, to Charles R. Drinkwater Bethune, at that time a midshipman of H.M.S. *Creole*, for his assistance in hydrographic details, as well as for endeavouring to bring the higher branches of astronomy into use; this officer subsequently as Captain of the *Conway*, in 1837, added largely to our descriptive hydrographic knowledge of parts of the Pacific. Captain Hall remarks,

Officers are too apt to underate the nautical knowledge which they acquire in the ordinary course of service; and to forget, that every piece of correct information which they obtain, especially on distant stations, is essentially valuable. If it be new, it is a clear gain to the stock already accumulated; if not, it is still useful as a corroboration; and this costs very little trouble, for a few practical observations, made during, or at the end of a voyage, give immense additional value to the dry details of a log-book." In Appendix No. 1, of Captain Hall's narrative, are Nautical Directions for passages made by H.M.S. *Conway* between the following ports are given,

Rio de Janeiro to river Plate.
Monte Video to Valparaiso.
Valparaiso to Lima.
Lima to Valparaiso.
Valparaiso to Lima by the Entremidios.
Chorillos to Valparaiso.
Valparaiso to Conception, Bay of Arauco and Island of Mocha.
Valparaiso to Lima, calling at Coquimbo, Gusaco, Copiapo, Africa and Mollendo
Lima to Pacasmayas, Payta and Guayaquil.
Guayaquil to the Galapagos Islands.
Galapagos Islands to Panama.
Panama to Acapulco.
Acapulco to San Blas.
San Blas round Cape Horn to Rio de Janeiro.
Rio de Janeiro to Bahia.
General remarks on the winds, weather, and navigation on the south and southern coasts of Mexico.

Appendix No. 2, gives a table of Latitudes, Longitudes, and Variation of the compass of various ports on the shores of the Pacific.

Appendix No. 3, gives an account of the pendulum observations made, with a description of how to make such observations divested of the scientific clothing in which such information is generally wrapped.

The first series of experiments were made in London. The next, 32½ miles north of the equator, at one of the Galapagos islands, lying about 600 miles west of the continent of South America; an astronomical circle, by Troughton, was used as a transit instrument, the various details of adjustment and of the connection between clock and observatory are very clearly described, and might still be studied with advantage by any one intending to perform similar service.

Observations with the pendulum were also made at San Blas and Rio Janeiro; the whole being presented to the Royal Society in 1823.

Appendix No. 4, contains a Notice on the climate of the western coasts of South America and Mexico, by George Bourie, Esq., Surgeon of H.M.S, *Conway*.

The following charts, principally by Mr. H. Foster, who is permitted to take the credit of his own labours by Captain Hall, resulted from this voyage,

Bay of Arauco.
Port of Gunaco.
Port of Copiapo.
Huacho bay, Ports of Cosma and Chilca harbour.
Port of San Blas.

See—Narrative of a voyage to Java, China, and the Great Loo-choo island, with Extracts from a Journal written on the coasts of Chili, Peru, and Mexico; the first in the years 1816–18, the second in the years 1820–22, by Captain Basil Hall. Bound together in 8*vo*. 1840.

Other editions of these works were also published including a 4*to*. volume on the Loo-choo Islands, by H. J. Clifford; also, a folio of charts of the China Sea by the same author; and a book of travels in North America, in 1827-28, in three 8*vo*. volumes, 1829.

In the Edinburgh, now Philosophical Journal, for July, 1826, is published a letter from Captain Basil Hall to Professor Jameson, termed:—"Notice of a Voyage of Research," in which is pointed out the various subjects that should be studied, described, or inquired into, upon such a Voyage.

M. L'ARTIGUE, (French),

1821-71.

The above was one of the most eminent of the many able hydrographic engineers that France has produced. His first labours appear to have commenced as far back as 1821, when attached to the *Clorinde*, one of Admiral Roussin's squadron which sailed from Brest, August 5th of that year, running meridian distances between that port, Teneriffe, Rio, Cape de Verd islands, steering a course northward of Trinidad, and fixing the geographical position of St. Nicolas island, Port Praya, and East end of Trinidad.

In 1825, in the schooner *la Lyonnaise*, he ascertained the difference of longitude by chronometer, between Fernando Noronha, and Pernambuco, and completed Admiral Roussin's survey on the north east part of the coast of South America.

In 1827, he published Sailing Directions for the coast of French Guyana, and in the same year a nautical description of the coast of Peru.

In 1836, observations upon the changes of Temperature and wind caused by the currents of the sea. In 1840, a work upon the theory of the wind system and movements of the air in the upper regions of the atmosphere, as well as near the surface of the globe. A second edition of this book was published by the same author in 1855.

In 1860, M. L'Artigue published observations upon the various data which served as the basis for his different theories respecting winds; and in 1871, an Essay upon the origin of

the several air currents. It will thus be seen, that that portion of Maritime Meteorology which treats of the wind system, is what M. L'Artigue devoted his attention to more especially during the latter portion of his life-time.

DR. J. L. TIARKS,

1822–23.

Dr. John Louis Tiarks was an astronomer, who in the summer of 1822, established the longitude of Funchal, Madeira, by means of seventeen chronometers which he carried with him from Greenwich to Falmouth, and thence to Madeira, returning by the same route.

In 1823, he again corrected the position of Pendennis castle, Falmouth, with twenty-six chronometers, and thus checked his former results.

The flagstaff of Pendennis castle being one of the points used in the great trigonometrical (ordnance) survey was thought the most convenient spot for determining local mean time, before and after the voyage to Funchal.

The equal altitudes were taken with a sextant of ten inches radious made by Troughton. At Funchal the observation spot was in the garden of the English consulate on the meridian of the house, being the same position as that used by Captain W. F. Owen and the officers of H.M.S. *Leven*.

Dr. Tiarks also devoted his attention towards determining by chronometer the precise longitudes relatively, of Dover. Portsmouth observatory, and Falmouth. He published

Report on Astronomical observations to ascertain the longitude of the Island of Madeira, 4to. 1822.

Report on chronometrical observations made in July, August, and September, 1823, with a view to ascertain the difference of longitude between Dover and Falmouth, and Portsmouth and Falmouth, *4to.* 1823.

JAMES WEDDELL, ESQ., R.N.

1822–24

In 1818, Mr. William Smith of the brig *William*, of Blyth, on the passage from Monte Video to Valparaiso, discovered in about the 62nd degree of south latitude, and in about ten degrees of longitude, eastward of Cape Horn, certain islands, to which the name of South Shetland was given.

Having communicated his discovery to the Captain of H.M.S. *Andromache*, stationed at Valparaiso, Mr. Barnesfield, the master of that ship, was sent to make a survey of their coasts.

He found the South Shetlands to consist of 12 islands, and many rocks above water, extending between latitude 61° and 63° S., and longitude 54° and 63° W.

The tracks of Cook and Furneaux passed within 45 miles of these islends, which therefore narrowly escaped being classed amongst their discoveries.

On the 17th December, 1822, Mr. James Weddell, a master in the Royal Navy, in the brig *Jane*, of 160 tons and 22 men, with the cutter *Beaufoy*, of 65 tons and 13 men under Mr. Matthew Brisbane, in company, sailed from the Downs for the purpose of collecting fur-seal skins in the South Shetland islands.

After calling at, and surveying Port St. Elena, on the coast of Patagonia, Mr. Weddell ran to the southeast in the beginning of January, 1823, and on the 12th of that month, came within sight of the South Orkney islands, which he discovered during a voyage made in the preceding year.

The boats coasted these islands for more than fifty miles; but seals being few, and the weather thick and boisterous, the vessels soon left these shores.

Mr. Weddell now shaped course to the southward, passing through numerous ice islands, especially between the parallels of 68° and 71°, after which, these obstructions to navigation disappeared, the weather became pleasant; and great numbers of seabirds were observed flying round the ship, and many whales seen.

As the navigators proceeded south, the weather became still milder, whales became more

numerous, and the sea was literally covered with birds of the blue petrel kind, without a particle of ice in sight

Under these favourable circumstances, Mr Weddell was hourly in expectation of discovering land ahead; but it was now the 20th of February, the close of summer in those latitudes: he was in longitude 34° 17′ W, and had reached latitude 74° 15′ S., when the wind blowing fresh from the south, he felt it would be imprudent to persevere in holding his course any further in that direction. "I would willingly" he says "have explored the south-west quarter; but, taking into consideration the lateness of the season, and that we had to pass homewards through 1000 miles of sea, strewed with ice islands, with long nights, and probably attended with fogs, I could not determine otherwise than to take advantage of the favourable wind for returning"

In this voyage Mr Weddell penetrated within the Antarctic circle 2[illegible] miles further than Captain Cook, or any preceding navigator. This part of the ocean, heretofore unexplored was named by him George the Fourth's Sea

It is worthy of remark, that he did not find the difficulties arising from ice increase as he proceeded southward, on the contrary, he found all appearance of a deep sea, a milder temperature, and an open ocean. He found, also, that the compass manifested the same sluggishness in a high southern latitude which other voyagers had found in the north polar regions

Violent gales having separated the *Jane* and *Beaufoy*, they repaired to South Georgia, which had been appointed as the rendezvous. This island previously examined by Cook, Weddell thoroughly described.

He relates a rather curious incident which occurred in endeavouring to make use of the artificial horizon for observations on the top of a mountain in South Georgia. He states "that after planting my artificial horizon, I was surprised to find, that although there was not a breath of wind, and everything around perfectly still, yet the mercury had so tremulous a motion, that I could not get an observation The ground was evidently agitated internally; though it was not only by means of the quick-silver that I could detect it."

South Georgia, was discovered by a Monsieur La Roche, in the year 1675. It was visited by a vessel called the *Lyon*, in 1756; but was not explored until the time of Captain Cook in the *Resolution*, in 1771

Having given an account of a search made by himself during a former voyage from February 1st to 7th 1829, for the Aurora islands, supposed to have been discovered by the Spanish exploring vessel *Atrevida*, in 1796, Weddell proceeded to New island, at the west end of the Falkland islands, and wintered in Quaker harbour of Swan island.

Having spent two winters at the Falkland islands, Mr Weddell then proceeds to give a hydrographic account of them, including a description of Freycinet's shipwreck in *L'Uranie*, on the Volunteer rocks, at the entrance of Port Louis, in February, 1820. It appears that he was near the spot at the time, and rendered material assistance to the French Commander He also describes how in November 1820, the Buenos Ayrain frigate *Heroud*, Captain Jewitt, had taken possession of the Falkland islands for that government; of the ravages of scurvy amongst the crew of that frigate; and of a mutiny which took place on board shortly afterwards.

On the 7th October 1823, the *Jane* and *Beaufoy* again sailed from the Falkland islands steering towards the South Shetland's in prosecution of the objects of their voyage.—Bad weather prevented the vessels making any prolonged stay in the neighbourhood of this group: but an interesting hydrographical account of them is given: this making Weddell's third visit Continuing to Cape Horn and Tierra del Fuego, through the Strait Le Maire, Monte Video was reached, April 3rd, 1824. Here, Commodore Sir Murray Maxwell (formerly of the *Alceste*) of H.M.S. *Briton*, offered every assistance in the repairs of the *Jane*.

On the 4th of May, Mr Weddell sailed from Monte Video, and on the 2nd of July, arrived off Falmouth.

A second voyage made by the *Beaufoy*, under Mr. Brisbane, which occupied about

eighteen months to the same part of the world; is briefly alluded to in the Appendix o the Narrative, from which this account has been taken.

The following charts are incorporated in Mr Weddell's Book:

River of Santa Cruz (Patagonia).
Port St. Elena (Patagonia).
South Orkney Islands.
South Shetland Island.
Two sheets of views of headlands, islands, &c., near Cape Horn and the South Orkney islands.
Polar chart of the Southern Hemisphere.
Berkley sound Falkland Island.
Tracks of *Jane* and *Beaufoy*.
Chart of Cape Horn, with plans of Indian cove, Wigwam cove and part of Duff bay.

See—A voyage towards the South Pole, performed in the years 1822-24, containing an examination of the Antartic Sea, &c., by James Weddell, R.N., F.R.S.E. 8vo. *London*, 1827.

VICE ADMIRAL A. T. E. VIDAL, R.N.

1823–46.

Alexander Thomas Emeric Vidal entered the Navy in December 1803, as first-class volunteer on board the *Illustrious*, Captains Sir Charles Hamilton, Michael Seymour, and W. Shield, with whom he served in the English channel, on the north coast of Spain, and in the West Indies, until November 1805.

In May 1808, he joined the Royal Navy College; and was afterwards received, in November 1809, on board the *Lavinia*, Captains Lord William Stuart, and George Digby; in which ship he was for upwards of three years employed on the Mediterranean, West Indies, Cadiz, and Lisbon stations, the chief part of the time in the capacity of midshipman.

In the course of 1713–14, he joined in succession on the Home Station the *Salvador del Mundo*, *Niobe*, *Cornwall*, *Namur*, *Bann*, and *Conway*. Having sailed in the latter ship for the North American station, he was there, and on the Canadian lakes, employed in 1815 on surveying service, and for a short time as flag lieutenant to Commodore Sir Edward Owen. He was then presented with a commission dated February 1815.

In August 1818, he was appointed to the *Leven*, Captain Bartholomew, and afterwards Captain W. F. Owen, under whom he served as first lieutenant until the death of Commander Cudlip, of the *Barracouta*, when he succeeded to the vacancy, and was confirmed in the rank of a Commander in May 1823. Serving throughout Captain Owen's African voyage, on his arrival in England in the *Barracouta*, he was promoted to post-rank on that vessel being paid off in October 1825.

In the summer of 1830, in consequence of the ill-success of the *Gannet* in 1824; of the *Harrier* and *Badger* in 1827; and of the *Pylades* and *Despatch* in 1829, in searching for the Aitkins' Rock, the Admiralty resolved to place the ten-gun brigs *Onyx*, Lieutenant Dawson, and *Leveret*, Lieutenant Worth, under the orders of Captain Vidal, to pursue the inquiry.

No less than seven different reports as to the existance of this danger had been received; the mean position assigned to it, was in about latitude 55° 16′ N., longitude 11° 40′ W, or some 70 miles northwest of Urris Head on the northwest coast of Ireland. The rock was said to be small, and 4 feet above water

Particular instructions were drawn up by Captain Beaufort, the hydrographer, for the method of proceeding on this examination. Chronometers were rated at Bunerana, and the search lasted from June 6th to August 31st; when, having visited every position assigned to this danger, and indeed the whole space comprehended by them, without seeing any rock, or discovering any detached bank, which could indicate its having existed, the search* was relinquished, and the brigs returned to England.

During this search the Vidal bank extending off the west coast of Ireland was discovered.

In December 1835, he sailed in the *Ætna* with twelve chronometers for the purpose of

*On the Vigia called the Aitkin's Rock. By Captain A. T. E. Vidal, R.N. Royal Geographical Society's Journal for 1831, p. 51.

measuring meridian distances to the Cape Verd Islands and west coast of Africa. In January 1836, he met the *Sulphur*, Captain Beechey, and *Starling*, Lieutenant Kellett. His chain of meridian distances extended to Porto Praya, Banana Island, Sierra Leone, Mesurada, Cape Palmas, Fernando Po, and Corisco Bay.

In 1838, Captain Washington, then Secretary of the Royal Geographical Society, remarked of the survey of west Africa, "This tedious undertaking is drawing to a close, and will then be of equal utility to the fair traders, and to the anti-slavery cruisers. It is fortunately in the hands of such a man as Captain Vidal, R.N., who has steadily devoted himself during a long period of ill-health, to complete this unpopular work, and to connect with it a minute examination of the Canary islands."

From September 1841 until January 1845, Captain Vidal conducted the survey of the Azores or Western Islands, in H.M.S. *Styx*, and from January 1845 until the early part of 1846, with his name on the books of the *William and Mary*, yacht.

He ultimately arrived at the rank of Vice Admiral, and died at Clifton, on the 5th of February, 1863, aged about 73 years.

The following were the principal amongst his charts:

West Coast of Africa.

Sheet 9—Sherboro island to cape Mesurada.
" 10—Cape Mesurada to cape Palmas.
" 11—Palmas to grand Lihou.
" 12—Grand Lihou to cape Three points.
" 13—Cape Three points to Banacoe.
" 14—Banacoe to cape St. Paul.
" 17—Cape Formoso to Fernando Po.
" 18—Fernando Po to cape Lopez.

Azores or Western Islands.
Corvo and Flores.
Terciera and Graciosa.
Fayal, Pico, and San Jorge.
Fayal channel, Horta and Pim Bays.
San Miguel.
Santa Maria and the Formigas.

Madiera, Porto Santo and Dezartas Island.
Funchal and Pontinha Bays.
Porto Santo Bay.
Salvage Islands.

Rockall.

CAPTAIN L. I. DUPERREY, (French).

1822-24.

Louis Isidore Duperrey was born at Paris on the 21st of October, 1776. He entered the French Navy at the age of sixteen, and in 1811, was employed upon the Hydrographical Survey of the coasts of Tuscany.

In 1817, he embarked as midshipman in the *Uranie*, and accompanied Captain Freycinet in a scientific voyage round the world, made in that ship.

He became a Lieutenant in 1822, and in that year set sail from Toulon as Commander of the *Coquille*, in which vessel he made a second scientific voyage round the world, which redounded greatly to the honour of the French nation, returning to Marseilles on March 24th, 1825.

The *Coquille* carried four chronometers. The guns near the standard compass of the vessel were removed and copper substituted for iron wherever possible. Throughout the voyage the temperature of sea and air were taken every four hours.

The places visited by Captain Duperrey in the course of this expedition were Teneriffe, St. Catherine Island, Falkland Islands, Talcahuana. In 1823, Callao; then Payta, Otaheite, Bora Boxa, Maupiti, Port Praslin, Waygiou, Cajeli, Amboyna, Savu, Port Jackson.

In 1824, New Zealand, Oalan Island, Port Dorey, Sourabaya, Mauritius, St. Helena, Ascension.

The main theatre of his explorations will thus be seen to have been Oceania, and he made

during his voyage a large number of observations on the pendulum, which served to demonstrate the equality of the flattening of the two hemispheres and contributed to the determination of the magnetic equator.

Geography owes to him also, maps of the Caroline Islands and Dangerous Archipelago. He was the author of several memoirs published in the "*Annales Maritim s*," &c., &c. The great merit of his labours, particularly those on terrestrial magnetism, gained him admission into the Académie des Sciences, in 1842. He died in August, 1865.

ADMIRAL F. BULLOCK.

1823–53.

Frederick Bullock entered the Navy, the 28th of November, 1804, on board the *Indefatigable* 46, Captains Graham Moore and J. T. Rodd, employed in the Channel: removed, in February, 1806, to the *Fame* 74, commanded successively by Captains Richard Henry Alexander Bennett and Walter Bathurst, on the Mediteranean station; and having passed his examination in 1811, was promoted to the rank of Lieutenant, 22nd January, 1812. His appointments in the latter capacity, were—16th April following, to the *Papillon* sloop, Captain James Hayes, in the Gut of Gibraltar—next, to the *Fearless* gun-brig, Lieutenant Commander Harry Lord Richards, in which he was wrecked, 8th December, 1812, near Cadiz—3rd November, 1813, to the *Revolutionnaire* 38, Captain John Charles Woolcomb, on the East India station, whence he invalided, in October, 1814—10th March, 1823, to the command of the *Snap* surveying vessel, on the Newfoundland station, in which, in 1824, he accompanied Captain George Francis Lyon, from England to the coast of Labrador, when that officer sailed on his voyage of discovery to the Arctic regions—and, 4th December, 1827, to the command of the *Echo* steamer at Woolwich.

He attained the rank of Commander, 26th August, 1829; was borne as a Supernumerary, from October following until 1836, on the books of the *William and Mary* yacht, Captains John Chambers White and Sir Samuel Warren; and on 8th June, 1837, was appointed to the *Boxer*. Although advanced to Post-rank, 28th June, 1838, Captain Bullock continued in the *Boxer* until transferred, 8th March, to the *Fearless*, another steamer.

His next appointments were, 1st January, 1843, and 1st July, 1844, to the *Tartarus*, and *Porcupine* steam surveying vessels. He paid off the *Porcupine*, in which he had been employed in the river Thames, 30th October, 1847; but continued attached to the surveying service, with his name on the books of the *Fisgard*, until the summer of 1853; on 8th August, in which year, he was awarded a pension for wounds. He was advanced to Flag-rank, 2nd October, 1857.

Rear-Admiral Bullock was elected a fellow of the Royal Geographical Society in 1830. He rose upon the retired list to the rank af Admiral, and died February the 6th, 1874, in his eighty seventh year.

Many of the charts resulting from his surveys have been superseded by modern productions; of those yet remaining are the following:

NEWFOUNDLAND.

Fogs Island to Partridge Point.
La Scie Harbour.
Cutwell Harbour.
Triton Harbour.
Fortune Harbour.

EAST COAST OF ENGLAND.

Thames River, London to Gravesend.
do. Gravesend to the Nore.
do. Sheet 3: Sea Reach.
do. Sheet 4: Gravesend Reach.
Medway River: Sheet 1.
do. Sheet 2.
North Foreland to Orfordness.

His chief work was a survey of the River Thames, which was executed upon a scale of six inches to the mile, in 24 sheets.

He was the inventor of what was considered an improved form of protractor by many nautical surveyors and draughtsmen, and of a patent log, the principle of which, consisted of the tension produced upon a line, as indicated by a special spring balance, by towing astern a cylindrical-shaped piece of heavy wood—In smooth water, and at a fixed rate of speed, this log was found to accurately denote the speed of a ship.

REAR-ADMIRAL SIR WILLIAM E. PARRY, Kt., LL.D., F.R.S.,
Hydrographer, Nov. 26th, 1823, to May 18th, 1823.
November, 1825, to March 25th, 1827.
November 1st, 1827, to July 20th, 1829.

CHAPTER IV.

The Walkers, Kendall, Skyring, Wickham, Modera, Back, Roe, Bougainville, Beechey, Copeland, P. Stokes, Zahrtmann, Kolff, Lutke, D'Urville, Dillon, Boteler, Foster, Mudge, Denham, Barnett, R. Owen, Slater, Moresby, Peytier, James Ross, Biscoe.

Sir William Edward Parry, born December, 1790, at Bath, was fourth son of Dr. C. H. Parry, F.R.S., an eminent physician in that city.

This officer entered the Navy, June, 1803, as volunteer, on board the *Ville De Paris*, Captain Ricketts, bearing the flag of the Hon. Wm. Cornwallis, in the Channel; where, and in the Baltic, he continued employed as Midshipman and Master's Mate on board the *Tribune* and *Vanguard*, Captains Baker and Glynn, until promoted to the rank of Lieutenant, January, 1810. In the *Vanguard* he commanded a gun-boat attached to the ship, in which he came into frequent action with the Danish flotilla.

Zealous in his profession, intelligent and ambitious, Parry soon recommended himself to notice, and after his promotion to Lieutenant's rank, was appointed in February, 1810, to the *Alexandria* 32, Captains Quilliam and Cathcart, in which vessel, besides affording protection to the Spitzbergen whale fishery, he was employed in making astronomical observations, and preparing the Admiralty Charts, which were much prized, of Balta Sound, of the Voe, a harbour in the north-eastern part of the Shetland Islands, and of various places on the coasts of Denmark and Sweden. It was here that he first became acquainted with that frozen ocean, amidst the dangers and difficulties of which he was destined to earn celebrity.

At the commencement of 1813, Lieutenant Parry proceeded in the *Sceptre*, Captain Honyman, to North America, for the purpose of joining *La Hogue*, Captain Hon. T. B. Capel. On the 8th of April, in the following year, having accompanied a detachment of boats under the orders of Captain Richard Coote to the neighbourhood of Pettipaque Point, on the river Connecticut, he there contributed to the destruction of 27 of the enemy's vessels, three of which were heavy privateers. In the course of 1814, Lieutenant Parry furnished many of the junior officers on the Halifax station with copies of his "Practical Rules for observing at Night by the Fixed Stars," a treatise which was afterwards published in order to "facilitate the acquisition of a species of knowledge highly conducive to the welfare of the naval service." In August, 1814, he exchanged into the *Maidstone* 36, and he next, in July, 1815, and January and June, 1816, became in succession attached to the *Ardent* 64, *Carron* 20, and *Niger* 38, all on the North American station. On his return to England in 1817 the extraordinary changes reported to have taken place in the state of the Polar Sea determined the Government to equip an expedition for Arctic discovery. This was the turning point in Parry's life. Like most men of enterprise, he seized the occasion, and determined to devote himself to Arctic adventure. There are but few who have not, at sometime, the chance of distinction, and Parry took advantage of his. In January, 1818, he obtained command of the *Alexander* brig, hired for the purpose of accompanying an expedition to the Arctic Regions under Captain John Ross, with whom he returned home in the following November; the result of this expedition was the restoration to our maps of the outline of Baffin Bay, and the re-discovery of the famed Lancaster Sound. A new expedition was then determined on, and the conduct of it entrusted to Lieutenant Parry, who was consulted in the choice both of his ships and officers. He accordingly assumed command January, 1819, of the *Hecla* bomb, and in the early part of the ensuing May sailed from Deptford in company with the *Griper* gun-brig, Lieutenant-Commander Liddon, for the purpose of carrying out the object of his mission—the discovery of a north-west passage. In the course of the voyage, which, although not thoroughly successful, exceeded in its general results the most sanguine expectations of its projectors. Lieutenant Parry penetrated to long. 113° 54′ 43″ W., within the Arctic circle, and thereby obtained for the expedition the sum of £5,000, the amount of a Parliamentary reward which had been promised to such as should cross the meridian of 110° W. from Greenwich, in the latitude of 74° 44′ 20″. In the following spring, by an overland journey, he discovered Liddon gulf, where his broken cart remained to be seen by M'Clintock thirty years afterwards. A full narrative of his proceedings will be found in a volume, published by him in 1822, entitled "Journal of a Voyage for the Discovery of a North-West Passage in 1819-20." The *Hecla* and *Griper* re-entered the Thames about the middle of November, 1820, and were paid off at Deptford the ensuing month. In November, Lieutenant Parry was advanced to the rank of Commander, and on 19th December, the Bedfordian gold medal of the Bath and West of England Society for the Encouragement of Arts, Manufactures and Commerce, was unanimously voted to him. With the sum of 500 guineas subscribed for the purpose, "The Explorer of the Polar Sea" was afterwards presented with a silver vase highly embellished with devices emblematic of his arctic voyages, and March, 1821, the city of Bath presented its freedom to him in a box of oak, highly and appropriately ornamented.

Although this voyage, like the last, failed in its main object, much valuable geographical knowledge resulted from it, and considerable information as to the Esquimaux tribes of that region was obtained. On returning to England, Parry was promoted to the rank of Captain, and in another year found himself once more on his way to the frozen North, in order, if possible, to co-operate with an overland expedition under Franklin. For this purpose the *Fury*, bomb, with the *Hecla*, commanded by Captain G. F. Lyon, sailed from the Nore, May, 1821. After passing two winters in the Polar regions, the first to the northward of Southampton Island, and the second at Ingloolik, a small island in latitude 69° 21′ N., longitude 81° 44′ W., the expedition with its object still unattained, but with the acquisition of much important geographical knowledge, returned to England November, 1823.

Captain Parry was then made Hydrographer, which post was rendered vacant by the death of Captain Thomas Hurd a few months previously. In December, 1823, the freedom of the city of Winchester was presented to him, and he then undertook the charge of a fresh expedition for the north Polar regions, sailing in May, 1824, with the *Hecla* and *Fury*, the latter being commanded by Captain H. P. Hoppner.

During his absence, the duties of hydrographer were undertaken by Mr. Michael Walker, the chief draughtsman, afterwards assistant hydrographer at the Hydrographic Office, under the immediate supervision of Mr. Croker, the first Secretary to the Board of Admiralty. The first winter of this expedition was spent at Port Bowen, of Prince Regent's Inlet, where the two vessels remained from September, 1824, to July, 1825. The *Fury* was shortly afterwards wrecked, and the *Hecla* thus became compelled to return forthwith to England with the double ship's company, where she arrived in October, 1825. On his return, Captain Parry resumed the duties of hydrographer, which du., he continued to perform until March, 1827. The freedom of the borough of Lynn had been voted him in December, 1825, in testimony of the high sense entertained by the corporation of his meritorious and enterprising conduct.

Still directing his attention to Arctic research, in January, 1827, he offered to carry out a scheme which had been proposed in 1818 by Sir John Franklin and Rear-Admiral Beechey, to attempt reaching a high northern latitude by travelling over the Spitzbergen ice with boats carried upon sledges. With this scheme in view, again leaving the hydrographership in the hands of Mr. Walker, he sailed in the *Hecla* in March, 1827, leaving that vessel in Trewvenburg bay, lat. 79° 55′ 20″ N., long. 16° 48′ 45″ E., in June following, and then took to his sledge boats. But an unexpected impediment presented itself, for the ice over which he travelled was found to move southward at almost the same rate that his party advanced northward, and he was most unwillingly compelled to retrace his steps, having proceeded to 80° 45′ N. latitude, or farther towards the pole than any of his predecessors. Captain Parry brought home and paid the *Hecla* off in November, 1827, and on the following day took up his duties again as Hydrographer to the Admiralty, which he continued to perform up to May, 1829. In April of the same year he received the honour of Knighthood. Captain Francis Beaufort succeeded him as Hydrographer.

In May, 1829, Parry was appointed Commissioner for the management of the affairs of the Australian Agricultural Company, and in pursuance of the duties of that office, took up his residence at Port Stephens, about 60 miles to the northward of Sydney. Before leaving England, in addition to Knighthood, he was made a D.C.L. of Oxford.

Returning once more to England after an absence of five years, and having resigned the duties of his Australian appointment into the hands of Captain P. P. King, R.N., he was made Assistant Poor Law Commissioner in the county of Norfolk, but did not long hold an appointment so uncongenial to his tastes. In April, 1837, Sir Edward Parry was appointed to organise and conduct a newly-created department of the Admiralty under the title of Comptroller of Steam Machinery, and it was during the time that he remained in this office that the screw propeller, now indispensable to our fleets, was introduced into the Navy.

Early in 1847, in consequence of failing health from over work, he resigned this also, and became Captain Superintendent of Haslar Hospital. In 1853, the Lieutenant Governorship of Greenwich Hospital falling vacant, he accepted it. Disease, however, had begun its ravages, and under the direction of his medical advisers, he determined to try the waters of Ems. On his way to those baths he was detained by exhaustion at Coblentz, and only reached Ems to die, at the age of 65 years. Thus ended the career of one of the most distinguished officers of that time, who had spent his days in active usefulness, and whose life was remarkable, not only for its varied character, but also for the genuine and unaffected piety which pervaded it.

During Sir Edward Parry's first absence from the Hydrographic Department, 1823 to 1825, an inquiry was instituted by Sir G. Cockburn, then First Sea Lord, which resulted in an effort at reorganisation, but no naval chief was appointed to do duty in Sir Edward Parry's absence, and owing to the unfortunate state of affairs the department had been for some

time passing through, great losses were sustained in the shape of original surveys and other documents. Valuable surveys which had taken years to execute, owing to the apparent opposition which existed against making use of them, never found their way into the Admiralty.

In 1825, Sir Edward Parry having returned from the Arctic, resumed his duties as Hydrographer, and was enabled to get Lieutenants A. B. Becher and Sheringham attached to his Department, for the purpose of compiling nautical directions to accompany the charts. Still, rather a troubled condition of matters continued, for it is evident that Mr. Croker, the secretary before alluded to, was using his energy and strong will not altogether in favour of the department.

In 1825, the first Catalogue of Admiralty Charts was published. It was divided into eighteen geographical headings or sections, the number of charts amounting to 736. Of these, the majority consisted of small sketches or plans, sold at the price of sixpence, and they can by no means be taken as typical of charts or plans of modern times. No accompanying directions were up to this time issued or published by the Admiralty.

In 1827, when Sir Edward Parry again left the Hydrographic Office to assume the command of an expedition to endeavour to reach the North Pole by boats, Mr. John Walker, the chief draughtsman, was again left in charge. In the same year, the Duke of Clarence, Lord High Admiral, and several of the old officers, among them Captain Peter Heywood and W. F. Owen, who had formerly been so unceremoniously dismissed, lost no time in making an appeal to His Royal Highness as to the state of the Hydrographic Department. The Duke was not slow to act; he wrote with his own hand an order for six extra draughtsmen to be entered on the establishment to prepare the documents, long lying idle, for engraving; that the surveying captains who had been employed abroad were likewise to prepare their works for the same purpose; that the officers of the Hydrographic Department were to be exclusively under the orders of their immediate chief; and that one of his own Council at the Board was to be considered the presiding officer of the establishment in case of any reference to the Board.

Matters were now in better training, and great advancement was made for a time. Shortly after Sir Edward Parry's return in November, 1827, however, and when he had again resumed his position as Hydrographer, the Duke of Clarence retired. Narrow views again got the upper hand in spite of Sir Edward Parry's efforts to the contrary, and seeing no prospect of conducting the duties with advantage to the service, or credit to himself, he resigned the appointment. His view of the Hydrographic Department is said to have been "that it made him the Director of a Chart Depôt for the Admiralty, rather than the guide or originator of Maritime Surveys." Sedentary pursuits never quite suited him, and becoming conscious, that situated as he found himself, the times were requiring something more of him than he considered, under the circumstances, he could give, he very wisely tendered his resignation. He was succeeded about July, 1829, by Captain (afterwards Rear-Admiral Sir) Francis Beaufort, and with this appointment a new era seemed likely to open up the Hydrographic Department, as well as the Surveying Service.

So far, Hydrography had been regarded as a kind of hybrid institution, the office at the Admiralty inviting, as it were, the opposition of the civil element at Whitehall, while the Surveying Service abroad was calculated to encounter the ill-will of the naval authorities afloat, from the circumstance that it was necessary that the officers composing it should be in a measure independent of their authority.

The originators of the Department, as will have been seen, contemplated but a very narrow sphere of action for it, and did not foresee the calls which the vast requirements of commerce and navigation would make upon the nation at no distant time, or that it would be the special mission of this country, foremost among the maritime States of the world, principally to provide for these wants.

The Department under Parry continued to fight its way into life, inch by inch, and was long regarded as a monster, swallowing annually so many thousands, estimated for the regular navy.

It may have had other enemies besides Mr. Croker, but certainly none holding so prominent a position, or a position in which disregard could be so effectively applied. Mr. Croker was a Fellow of the Royal Society, a title which in those days had more importance attached to it than in the present sceptical epoch, for the Royal Society boasted fewer sleeping partners in 1821 than in the present day. Doubtless he had his duty to do, or what he regarded as his duty, in a financial way, viz., to keep down the expenses of the Admiralty as well as of the navy generally. He saw the original estimate of £450 for the Department, rolling and swelling at a dangerous rate of speed. It is possible that a youthful Department, promising such rapid growth as did the Hydrographic, appeared likely to soon exceed the limits of his control. Looked upon from his point of view, it may have appeared an institution of highly-skilled map makers, who, encouraged by a few enthusiastic naval officers, were likely to make work for work (not without profit's sake). It has been said that he imposed upon the traditional credulity of the naval members of the Board, using the oft repeated arguments so dear to the naval mind—that they had managed to navigate ships and conduct operations without such scientific charts in their day; why, therefore, should not the navy of the period, and posterity, do the same?

Mr. Croker was listened to, and that his advice carried great weight there can be no doubt, but the sheer vitality of the Department saved it. It could not be quite done without, and being allowed to exist at all, it was bound to grow, increase, multiply, improve.

The progress and changes amongst the naval surveying vessels at home and abroad between 1823 and 1829, were not numerous.

In January, 1825, the *Blossom*, of 24 guns, was fitted out by Commander F. W. Beechey, who had been the Chief Surveying Assistant to Captain Smyth in the Mediterranean, for a voyage round the world. Lieutenant Edward Belcher, who afterwards commanded the *Sulphur* and *Samarang*, was appointed as the Second Lieutenant and Assistant Surveyor.

In September the *Mastiff*, brig, under Commander Richard Copeland, succeeded the *Adventure* in the Mediterranean, which latter vessel, in the same month was commissioned by Captain P. P. King, with the *Beagle*, under Captain P. Stokes, for a survey of the coast of South America and Magellan Strait.

In November, 1826, Lieutenant Bayfield was made a Commander, and continued with hired appliances his extensive operations in connecting Lakes Erie, Huron, and Superior, with the river St. Lawrance.

In December, 1826, Lieutenant Frederick Bullock, who had been in command of the *Snap*, employed on the survey of Newfoundland, appears in command of the steam vessel, *Echo*, at Woolwich. This (1826) was the year also in which Captain Dillon first got trace of the expedition of La Perouse, which he induced the authorities in India to allow him to successfully follow up the next year in their surveying vessel, the *Investigator*.

In February, 1827, Captain W. F. Owen, who had returned from his great African survey in the preceding autumn, was appointed to the command of the *Eden* for special service, in the first instance directed towards the formation of a British colony at Fernando Po. Commander Boteler, too, who had served throughout Captain Owen's campaign, latterly, and for the greater part of the time as first Lieutenant of the *Barracouta*, and from whose journal so much of the narrative of that expedition has been culled, was appointed to the command of the *Hecla* for a continuation of the survey of the West Coast of Africa, in the first instance between Cape Roxo and Cape Verd. H.M.S. *Chanticleer*, under Commander H. Foster, who had accompanied Basil Hall in the *Conway*, on the coasts of South America, and Captain Parry in his search for a N.W. passage, was commissioned in December of this year for special surveying service, in the former part of the world, in which further pendulum observations were to form a part. Commander William Mudge, Captain Owen's former first Lieutenant, was also engaged this year in surveys of the N.W., and afterwards the N.E. coast of Ireland. Lieutenant Denham, in December, assumed the command of the *Linnet* for the examination of part of the north coast of France.

In 1828, Lieutenant E. Barnett succeeded to the command of the *Linnet* for the survey, which was still being continued, amongst the Channel Islands. Commander R. Fitzroy had been appointed by the Commander-in-Chief in South America to the command of the *Beagle*, vacant by the unfortunate death of Captain P. Stokes, November 23rd.

In May, 1829, the *Blossom* having returned under Captain Beechey from her voyage round the world, was commissioned by Commander Richard Owen, who had been serving in the Bristol Channel survey, for the West Indies, in succession to the *Kangaroo*, Master Commander De Mayne, which vessel had returned to England the previous year. Lieutenant Michael Slater was appointed to survey part of the east coast of England in the neighbourhood of the Tyne.

The officers most prominent amongst the East Indian nautical surveyors at about this time, besides Captain Brucks already alluded to and Lieutenant Haines, were Captain R. Moresby, who had executed a survey of the Tavoy River in 1824, and who, at the close of 1829, was selected by the Indian Government to conduct the survey of the northern half of the Red Sea and Gulf of Suez in the *Palinurus*, while Captain Elwon, in the *Benares*, undertook the southern part, from Jiddah to Bab-el-Mandeb.

From foreign nations the following were the chief contributions to Hydrography :—

In March, 1824, Captain Bougainville left Brest in the *Thetis* for an exploratory voyage, more especially directed to the neighbourhood of Pondicherry, Java, and the Eastern Archipelago.

In 1826, Captain Zahrtmann, of the Danish Royal Navy, obtained some chronometrical measurements in the West Indies. Lieutenant Koiff, of the Dutch Navy, surveyed part of the Moluccas in the brig *Dourga*.

Captain Lutke, in command of the Russian frigates *Seniavine* and *Moller*, sailed September 1st for a voyage of research amongst the Aleutian Islands to Awatska Bay, across the Pacific to Petropaulski and Manila, thence home by the Cape of Good Hope.

Captain D'Umont D'Urville, in *L'Astrolabe*, sailed from Toulon in April of this year, on the first of his celebrated voyages.

In 1828, Le Saulnier, with the brigs, *Badine* and *Alsacienne*, sounded on the West Coast of France, proceeding to Cape Finisterre, and correcting the Spanish Hydrographer, Tofino, in certain positions.

In the early part of 1829, previous to Sir Edward Parry's resignation and shortly before Captain Beaufort became Hydrographer, the following Admiralty surveys were in progress :—

Captain P. P. King	*Adventure*	South America.
Commander R. Fitzroy	*Beagle*	Ditto.
Commander H. Foster	*Chanticleer*	Ditto.
Commander T. Boteler	*Hecla*	West Africa.
Commander R. Owen	*Blossom*	For West Indies.
Commander R. Copeland	*Mastiff*	Mediterranean.
Commander H. Bayfield	*Hired Boats*	Canada.
Commander W. Mudge	*Hired Boats*	Ireland.
Commander W. Hewett	*Protector*	North Sea.
Lieutenant E. Barnett	*Linnet*	Channel Islands.
Lieutenant M. Slater	*Hired Boats*	River Tyne.
Lieutenant F. Bullock	*Echo*	River Thames.
Lieutenant H. M. Denham	*Hired Boats*	Bristol Channel.
George Thomas, Esq.	*Investigator*	Shetland Islands.
Captain W. F. Owen	*Eden*	Particular Service.

Lieutenants Wickham and Graves were under Captain King, the latter commanding the tender to the *Adventure*. Lieutenant Skyring, who afterwards was so foully murdered on the West Coast of Africa, continued as Supernumerary Lieutenant and Surveyor in the *Beagle*.

With Commander Richard Owen, in the *Blossom*, was Lieutenant Bird Allen; and Lieutenants Horatio Austin and Kendall were in the *Chanticleer*, under Commander Foster.

Besides Lieutenants Badgley and Mercer, Captain W. F. Owen, in the *Eden*, had with him Lieutenant H. Kellett.

The Hydrographic Department consisted of Sir Edward Parry, Hydrographer; John Walker, Esq., Assistant Hydrographer; Michael and Thomas Walker and one other draughtsman, and one clerk.

The number of charts, plans and views available for issue and sale, as shown in the published catalogue of 1829, amounted to 942.

It was customary at this period to print brief sailing directions upon the charts and plans, but in addition to this method, the following were separately published by the Admiralty:—

Directions for Coasts of Spain, Portugal and Balearic Islands.
Directions for the North Sea.
Coast of Karamania Pilot.
Description of the Coasts of Nova Scotia.
Memoir on the navigation of South America.
Description of the Coast of Africa between Cape Blanco and Mount Sowzoo, translated from the French of Baron Rousson, by Lieutenant J. Badgley, R.N.

The Agents for the Admiralty Charts at this time consisted of Messrs. Wyld, Arrowsmith, Norie, and Laurie, in London; J. and A. Walker, of Liverpool; and J. King, of Bristol. Later on, in 1829, by Captain Beaufort's suggestion, and mainly to save the trouble and time of corresponding with so many firms, Bate, of the Poultry, was appointed sole chart agent to the Admiralty, and permitted to employ as many sub-agents as he considered necessary, both at home and abroad.

Sir Edward Parry was made an LL.D. of Oxford before his death; he was also a fellow of the Royal Society's of London and Edinburgh, and a member of the Imperial Academy of Sciences of St. Petersburgh. Amongst the works written by him were:—

Astronomy by Night.
The Parental Character of God.
Journal of four voyages for the discovery of a N.W. passage from the Atlantic to the Pacific, including an attempt to reach the North Pole, 1819-27, 4 vols. 4*to*, 1823-28.
Lecture on the Character, Condition, and Responsibilities of British Seamen, 12*mo*. 1854.
He was also associated with three papers published in the transactions of the Royal Society.

His personal character and worth appear to have been well summed up in a few lines quoted in the memoir of his life by his son, the Rev. E. Parry:—

"Both sex's virtues were in him combined:
He had the firmness of the manliest mind,
And all the tenderness of woman-kind.
He never knew what envy was, nor hate,
His soul was filled with worth and honesty,
And with another thing quite out of date,
Called modesty."

THE WALKER'S.

Mr. John Walker, born in 1787, acted in the capacity of Assistant Hydrographer to Captain Hurd, R.N., as well as to Sir Edward Parry, and was the founder of a family who gained considerable reputation as map engravers to the English Government. He had worked privately for Alexander Dalrymple, the first hydrographer, and through him became connected with the Admiralty in 1796, the year after the formation of the Hydrographic Office. His name also appears on the maps of Vincent's Nearchus, on that of Lett's Abyssinia, and on many others of that period.

Sir Edward Parry immortalized the name of John Walker by attaching it to a lofty Cape, in the far north, well-known to many of the Arctic travellers of the old school.

John Walker, under Mr. Croker, the secretary of the Admiralty, for some time conducted the scientific and technical portion of the duties of Hydrographer; the professional, or

that which related to the connection between the Naval Surveying Officers and the Hydrographic Department, having, during the absence of Sir William Parry, fallen back almost into the same condition that they were found in by Captain Hurd when he succeeded Dalrymple in 1818.

Mr. John Walker, who left the Admiralty in 1831, and died on the 26th of July of the same year, left four sons, John, Michael, Thomas, and Charles; these continued in the same sphere as their father, each bringing to bear great powers of perseverance, judgment and ability upon their special tasks. Of these, Mr John Walker succeeded Captain Horsburgh, as Hydrographer to the India Office in 1836. He was employed as early as 1825 by the East India Company to construct the India Atlas, which was designed to occupy 177 sheets (40 inches by 27) on the globular projection and scale of four miles to an inch; of which 84 were completed by him. The numerous other maps and charts, including 87 from surveys executed by officers of the Indian Navy, are described by Mr. Clements Markham, C.B., F.R.S., in the second edition of his Memoir on the Indian Surveys, p. 405. He also tells us that engraving was Mr. John Walker's special work, "that his duties as a cartographer were admirably performed," and that there had always been the highest testimony to the accuracy and excellent style in which the numerous sheets of the Indian Atlas were produced.

This Mr. John Walker, junior, was the depository of official traditions at the India Office, extending over half a century, and his well-stored memory frequently proved of great value to his successors. Just before his death he received a complimentary letter, which was addressed to him by order of the Secretary of State for India, on the value of his long and zealous services.

He died in his 86th year, April 19th, 1873, having been in the employ of the East India Company and the India Office for 48 years. Of him, Colonel (now General) Walker, the head of the Great Indian Trignometrical Survey, who had been deputed to make the necessary arrangements for the completion of the Indian Atlas, writes:—"He alone knew anything about the theoretical principles or the practical details of the system of projection on which the sheets of the Indian Atlas had been constructed hitherto." When his health broke down there was no one to take his place, consequently most of the new sheets had not yet been commenced, for he had not been able to construct the projections and put the materials together. On the other hand, the completion of the copper-plates, which were actually in the hands of the engravers, was progressing very slowly, for want of funds to pay the engravers. Mr. Walker had been in the habit of paying all the expenses of engraving from his private means in the first instance, and sending in bills to the India Office after the completion of the work; but for upwards of ten years he had not taken any steps even to reimburse himself for the large advances which he must have made, and hence the operations languished for want of funds.

Out of deference and regard to the great family of geographers and engravers, by one of the members of which, the Atlas had hitherto been brought out so admirably, an arrangement was made with Mr. [illegible] Walker, a younger brother of the deceased, who had once been in partnership with [illegible] had long retired from business, for the completion of the plates actually in the hands of the engravers; but Mr. Charles Walker died very suddenly and unexpectedly, while the arrangement was under discussion. There was no other member of the family who was in a position to take his place, and thus the connexion of the Walker family, with the great Indian geographical work with which its name had been so long connected, became dissolved, and the copper-plates and geographical materials were collected together and returned to the India Office.

Of the remaining brothers, Michael and Thomas, who were employed at the Admiralty as chart draughtsmen, the first was the more important official, and as such, better known to naval surveying officers of the past 30 years. He left the Admiralty shortly after Rear-Admiral Washington's death in about the year 1864, and died in February, 1868. Thomas Walker who, though excellent in all respects, was hardly his brother's equal in talent and powers of work, left the Admiralty in 1865, and died May 10th, 1881, at an advanced age.

LIEUTENANT E. N. KENDALL, R.N.

1825-29.

Edward Nicholas Kendall entered the Navy 26th October, 1814, and passed his examination in 1822. He served in the expedition to the Polar Sea, under Sir John Franklin, in 1857, on which occasion he completed the survey of the Great Bear Lake, and as the companion of Dr. Richardson, was the surveyor who delineated the north coast of America between the Mackenzie and Copper Mine Rivers. Following the shores of two extensive bays named respectively Liverpool and Franklin, and discovering Wollaston Land, he advanced sufficiently far up Coronation Gulf to join the survey where it had formerly been discontinued by Captain Franklin. Fort Franklin, in the Great Bear Lake, was successfully reached September the 1st, 1826, the length of coast examined being 902 miles; he was awarded a commission, dated 30th April, 1827. Lieutenant Kendall was next appointed Second Lieutenant and Assistant Surveyor of H.M.S. *Chanticleer*, Commander Foster, which made a scientific voyage to South America between the years 1827-30.

Besides contributing the descriptive hydrography to the account of that voyage, which was edited by Lieutenant A. B. Beecher, a paper giving an account of the Island of Deception, one of the New Shetland islands from his pen, was communicated by Sir John Barrow to the Royal Geographical Society, read in January, 1831,* and published in the journal of that year. In it, Lieutenant Kendall points out that the South Shetland Islands, said to have been discovered by Mr. William Smith, Commander of the brig *William*, on his voyage from Monte Video to Valparaiso, were more correctly only re-discovered, for that "Dirck Gheritz, who commanded one of five ships which sailed from Rotterdam in 1598 to make a Western passage to India, became separated from his companions off Cape Horn, and carried by tempestuous weather as far as latitude 64° S., where he discovered a high country, with mountains covered with snow, resembling the Coast of Norway, and there can be no doubt, that this was the group of islands in question."

After describing Smith Island of this group, and giving an account of Deception Island, on the south-east side of which, in a small cave, the *Chanticleer* was secured, as well as of a remarkable lake or internal sea, having an opening about six hundred feet in width, here situated, on the 8th of March, 1829, after a stay of two months, the *Chanticleer* took her departure, not without difficulty, owing to the fury of the gales which had blown down all the tents of the Surveyors, and broken many of the instruments.

Lieutenant Kendall died on the 12th of February, 1845, at Southampton, in his 45th year. At the period of his death he was Superintendent of the Peninsula and Oriental Steam Packet Company; as such he wrote:—

Remarks on Steam Navigation between England and Australia, 12*mo.* Southampton, 1842.

Apart from his Arctic Explorations, he is quoted as the authority for the following charts engraved by the Admiralty:—

Staten Island of Tierra del Fuego.
St. Martin Cave " "

LIEUTENANT J. MODERA (Netherlands).

1828.

An expedition in the Netherlands corvette *Triton* and Colonial schooner *Iris* was formed in 1828, with a view to establish a settlement on some convenient spot on the west coast of New Guinea.

During the voyage out the greater portion of the south-west coast of that island was partially surveyed, the general trending only, of which, had been previously ascertained.

* *R. G. S. Journal* for 1831, p. 62.

A brief sketch of the progress of discovery on these shores may furnish a suitable introduction to this voyage. The Portuguese claim the discovery of New Guinea for Abreu and Serrano, who were despatched from Malacca to the Spice Islands, by Albuquerque, in 1511.

Abreu proceeded no farther than Amboyna, and Serrano was wrecked on one of the neighbouring islands, so that it is not likely that either discovered New Guinea, although they might have heard of its existence from the natives of Amboyna.

The discovery may, with more justice, be attributed to Alvaro de Saavedra, who was sent from the Moluccas on a voyage of discovery to the eastward in 1527. Many of the bays and headlands on the north coast were named by the Portuguese, and these were retained on a Dutch chart published at Amsterdam as late as 1753.

In 1537, the north coast was visited by Grijalva and Alvarado, two Spaniards, who had been sent on a voyage of discovery from Mexico by Cortez; and again, in 1567, by Mendana, who, in 1595, attempted to colonize the island of Santa Cruz, about 1,100 miles eastward of New Guinea, but the settlement was broken up at his death.

The above-mentioned voyages were confined to the north coast. In 1606, ten years after their arrival in the Indian Archipelago, the Dutch despatched the *Duyfhen*, from Bantam to New Guinea. She passed along the south-west coast, and stretched across to Australia, which was considered to be merely a continuation of the coast of New Guinea.

In the same year Torres, after having separated from Quiros, near Vera Cruz, passed between New Guinea and Australia, discovering the strait which bears his name.

In 1616, the north coast was traced by Schouten and Le Maire, and the Dutch navigators, Carstens in 1623, Gerard Pool in 1636, and Tasman (second voyage) in 1644, followed the track of the *Duyfhen*. Carstens and Pool were both murdered, and as two rivers on the north-east coast are named in the old charts Doodslagers, or Murderers' Rivers, they probably met their death in the vicinity. All these navigators supposed that New Guinea was united to Australia, and previous to 1762 it was thus represented on the charts.

In 1762, at the taking of Banda by the British, an original letter of Torres, describing his proceedings after parting with Quiros, was found by Dalrymple, and is published in his collection of voyages to the South Seas.

In 1700, Dampier, in the *Roebuck*, touched at Sabuda Island, near the west coast of New Guinea, and passing through the strait between Waygiou and Battanta, sailed round New Britain, and discovered the strait which divides it from New Guinea. He then passed to the westward along the north coast of the latter island. Roggeveen, Carteret and Bougainville pursued nearly the same track as Dampier along the north coast. Cook touched on the south-west coast in 1770, but remained only a very short time, and had no friendly communication with the natives.

In 1774, Captain Forest visited Dorey Harbour at the north-west end of New Guinea (page 18); and, in 1791, Lieutenant M'Cluer surveyed part of the west coast (pages 15 and 32). D'Entrecasteaux, Duperrey, and D'Urville also visited the eastern and northern coasts.

On the 21st of April, 1828, the Dutch corvette *Triton* and the Colonial schooner *Iris* left Amboyna, and after sighting Bird Island, and having passed through the group which stretches from the Ki Islands to Ceram, and which, until then, formed the eastern boundary of the Dutch Oriental possessions, they entered the channel between the Ki and Arrou Islands, and on the 20th of May made the coast of New Guinea in latitude 7° 15′ S. The following day the vessels entered Dourga Strait (discovered in 1825 by Kolff), and anchored off the north shore. After examination, no place suitable for a settlement having been found, the vessels left the strait, and on May the 28th, sighted the village in latitude 6° 17′ S. seen by Cook during his first voyage. On the 29th, a shoal was met with in latitude 6° S., and the following day the Providential Bank was seen.

On June 2nd, after having traced the coast for 230 miles to the north-west of Dourga Strait, the vessels anchored off the mouth of False Utanata River, in latitude 4° 48′ S.

June 8th, the voyage was resumed to the north-west, and on the 11th anchorage was found off the mouth of the Utanata River, where they remained until the 22nd, cutting wood and filling up with water. Continuing the voyage to the north-west on the 27th, having passed through a strait dividing some high islands from the main, they visited a village in a small cave on the north side of Aiduma Island, with a view to establishing a fort, but conceiving that a large land-locked bay on the main land served the purpose better, a fort which consisted of a square enclosure of stakes surrounding a few huts, was completed. To this the name of Fort du Bas was given. Two officers were sent to survey the neighbouring coasts, and the *Iris* was despatched to Amboyna for provisions and stores.

August the 20th the *Iris* returned, having on board several guns for the fort. The Commander reported the arrival of the French ship *L'Astrolabe* at Amboyna under D'Urville, from the South Seas, many of her crew being sick.

August the 24th the fort was opened with much ceremony, and possession taken, in the name of the King of the Netherlands, of the entire west coast, and part of the north and south coasts of the island westward of the meridian of 141° E. on the south coast, to the Cape of Good Hope on the north.

September the 1st the vessels left the coast of New Guinea, and arrived at Amboyna on the 5th, when sixty-two men were sent ashore to the hospital, several of whom died, making the total loss of European seamen, by sickness during the voyage, amount to twenty-one.

The following geographical positions were ascertained by the *Triton* during this voyage:—Bird Island (south of Banda), the north-east point of Great Ki Island, and the north-west point of Wassier Island (one of the Arrou Islands).

From Amboyna the *Triton* continued to Timor, where the naturalists were employed in researches in the interior. The main hydrographic result of the voyage was the rough survey of the west coast of New Guinea between Fort Du Bas and Dourga Strait. (Abridged from the *R. G. S. Journal* for 1838.)

LIEUTENANT W. G. SKYRING.

1828-33.

The date of this officer's commission as a lieutenant was March 20th, 1823, but previous to this he had (in 1820) served under Captain Smyth in H.M.S. *Aid*, in the Adriatic. In 1824, his name appears on the books of the *Protector*, on the east coast of England, under Commander W. Hewett.

In September, 1825, he was selected as lieutenant and assistant surveyor for the *Beagle*, Captain Pringle Stokes, which vessel (with the *Adventure*, Captain P. P. King), fitted out for the survey of the South American coast, and upon the death of that officer in November, 1828, was appointed to the acting command by Captain King, but the Commander-in-chief of the station having nominated his flag-lieutenant, Robert Fitzroy, to the vacancy, Lieutenant Skyring was constrained to continue in his former capacity in the *Beagle* until paid off in 1830, on the 25th of February, in which year, he was made a Commander.

In the charts resulting from the *Beagle's* voyage, Skyring Water, in the neighbourhood of Magellan Strait, is named after him.

He appears to have remained unemployed as a Commander until October, 1833, when he was appointed to the command of the *Etna* (with the *Raven*, Lieutenant Arlett, as tender), in succession to Commander Belcher, for the continuation of the survey of the west coast of Africa, and was foully murdered by the natives at the Caches River, near Cape Roxo, December the 22nd, 1833, while executing his arduous duties as a nautical surveyor. The *Etna*, under the acting command of Lieutenant Arlett, and the *Raven*, under Lieutenant Kellett, returned to England in 1834, sailing again in December of that year, with their appointments confirmed for the continuation of the survey of the same coast.

COMMANDER J. C. WICKHAM.

1827-37.

John Clements Wickham entered the navy in February, 1812; passed his examination in 1819; and was made Lieutenant 6th October, 1827, into the *Adventure*, surveying vessel, Captain Philip Parker King, on the South American station, whence he returned to England and was paid off in November, 1830. His next appointment was in 1831, to the *Beagle*, another surveying vessel, Captain Robt. Fitzroy, with whom he returned to South America as First Lieutenant. He came home again at the close of 1836, and on the 10th January, 1837, he was advanced to Commander's rank. Commander Wickham was re-appointed to the *Beagle* 16th February, 1838.

The *Beagle* sailed from the Swan River, Western Australia, January 4th, 1838, and having carefully examined the shores of Roebuck Bay, with a view towards ascertaining if Dampier land were an island, as had been supposed, proceeded to the northward, narrowly examined every part of the coast as far as Point Swan.*

Beagle Bay, in latitude 16° 50′ S., was found to afford the best anchorage on this part of the coast, and here Captain Wickham remained to rate chronometers and complete wood and water until February 9th. From Beagle Bay a course was steered for Sunday Strait, the plan of which, formerly commenced by Captain P. P. King, was completed. Here shelter was found under the largest of the islands situated on the west side of Sunday Strait, and named Roe's Islands, in compliment to Lieutenant Roe, who had been the senior Assistant Surveyor under Captain King.

Proceeding to Cygnet Bay, a close examination of the coast to the southward was made, and many good anchorages were found. Having reached as far as Foul Point, Lieutenant J. L. Stokes was sent with two boats to trace the coast to the southward, and he found that the head of King Sound terminated in a river, to which the name of Fitzroy was given.

Between King Sound and Port George IV., the shore of the main land was carefully traced by the same officer in quest of any considerable opening or river, but without success.

Having met Lieutenant Grey and his party, who had returned from a journey of exploration in the interior, and receiving supplies at Swan River, the *Beagle* proceeded to Sydney for refit, before examining Bass Strait.

In March, 1841, Commander Wickham was invalided to England, and after spending some time upon half-pay, obtained the appointment of a police magistrate in New South Wales, in which capacity he died about the year 1860.

ADMIRAL SIR GEORGE BACK, Kt. C.B.

Sir George Back, born 6th Nov., 1796, at Stockport, in Cheshire, entered the Navy in Sept., 1808, on board the *Arethusa* 38, Capt. Robt. Mends. He was present at the capture, off Cherbourg, of *Le Général Ernouf* French privateer; and, in the course of March, 1809, he assisted in the boats, while serving on the north coast of Spain, at the destruction of the batteries at Lequeytio, defended by a detachment of French soldiers—at the seizure also of several vessels up the River Andero—and at the destruction of the guns and signal-posts at Baignio, on which latter occasion he was made prisoner and sent to France, where he remained until May, 1814. On regaining his liberty, Mr. Back joined the *Akbar* 60, flagship for some time of Sir Thos. Byam Martin, at Flushing, and afterwards employed on the Halifax station. He became attached, in March following, to the *Bulwark* 76, bearing the flag of Sir Chas. Rowley, in the River Medway; and, on 14th Jan., 1818, removed to the *Trent*, hired brig, Lieut.-Commander, afterwards Sir John, Franklin. After intermediately accompanying the voyage of discovery made to the neighbourhood of Spitzbergen under

* *R. G. S. Journal* for 1838, p. 460.

Capt. David Buchan,* he was, early in 1819, selected to attend the former officer in his expedition overland from Hudson's Bay to the Coppermine River. To Capt. Franklin's "Narrative of a Journey to the Shores of the Polar Sea in 1819-22," we must refer our readers for the particulars of that undertaking—throughout every detail of which, including his journey on foot, in the depth of winter, from Fort Enterprise to Fort Chipewyan and back, a distance of 1,104 miles, Back displayed in perfection all the qualities of a traveller of the most heroic cast. On 1st Jan., 1821, he was promoted to the rank of Lieutenant, and on being subsequently appointed to the *Superb* 78, Capt. Sir Thos. Staines, visited Gibraltar and Barbadoes.

In Feb., 1825, Lieut. Back, after attending a public dinner given to him by his fellow-townsmen at Stockport, again left England with Capt. Franklin, on another expedition to the Arctic Regions, for the purpose of co-operating with Capts. Fred. Wm. Beechey and Edw. Wm. Parry, in their simultaneous endeavours to ascertain, from opposite quarters, the existence of a north-west passage. Capt. Franklin's "Narrative of a Second Expedition to the Shores of the Polar Sea in 1825-7," will also afford every information on the subject of this very interesting mission. In its execution he extended his researches to lat. 70° 24′ N., long. 149° 37′ W. During this last sojourn in America Lieut. Back was promoted to the rank of Commander, by commission dated 30th Dec., 1825; and when Capt. Franklin, on the return of the expedition, set out in advance, with five of his party, from Great Bear Lake, he was left at Fort Franklin in charge of the other officers and men, the boats, and the collections of natural history, rough journals, notes, and astronomical, magnetical, and meteorological observations, with orders to proceed, on the breaking up of the ice, to York Factory, and thence to England, where he arrived 10th Oct., 1827. From that period he remained on half-pay until appointed, early in 1833, to conduct an expedition fitted out for the purpose of seeking Sir John Ross, who had, in the summer of 1829, gone in quest of the long-sought north-west passage. A full account of the results of that harassing enterprise, in the course of which he had the good fortune to discover the sources of the river that now bears his name, Capt. Back has delineated in his "Narrative of the Arctic Land Expedition to the Mouth of the Great Fish River, and along the Shores of the Arctic Ocean, in 1833-5." He returned to England 18th Sept., 1835, and on the 30th of the same month was advanced to the rank of Post-Captain. On 11th May, 1836, he was next appointed to the *Terror* bomb; and, on 23rd June following, he sailed from Papa Westra, one of the Orkneys, in command of a new expedition to the frigid zone. The details of his return to Lough Swilly, where he arrived 3rd Sept., 1837, after reaching as far only as the northward of Charles Island, in Hudson's Bay, were published by Capt. Back in his "Narrative of an Expedition in H.M.S. *Terror*, undertaken with a View to Geographical Discovery on the Arctic Shores, in 1836-7."

Sir Geo. Back, who was presented, 27th Nov., 1837, with the gold medal of the Royal Geographical Society for his important discoveries while in search of Sir John Ross, and who received the honour of knighthood 18th March, 1839, was afterwards employed by the Treasury. He died the father of modern arctic explorers in the year 1880.

COMMANDER JOHN S. ROE, R.N.

1823.

John Septimus Roe was born at Newbury, in Berkshire, being the seventh son of the Rev. James Roe, of the same place.

He was educated at Christ's Hospital, and entered the Royal Navy as a midshipman in June, 1813, being then fifteen years of age, on board the *Ripon* attached to the Channel fleet. On the 21st of October of that year he was present at the capture of *Le Weser*, a French, 40-gun frigate.

From August, 1814, to January, 1817, he served on the North American, Home, and East India stations in the *Horatio* 38, Captain William H. Dillon. On the latter station he first gave his attention to nautical surveying, producing more than one creditable plan.

* See "A Voyage of Discovery towards the North Pole, performed in H.M. Ships *Dorothea* and *Trent*, under the command of Capt. David Buchan, 1818."—By Capt. F. W. Beechey, R.N. 8*vo*. Lond., 1843.

From February, 1817, until June, 1823, he was employed under Captain P. P. King, on surveying service in Australia, part of the time in the *Bathurst* sloop, of which vessel he was made a Lieutenant 25th April, 1822. In February, 1824, he was appointed to the *Tamar* 26, Captain James Gordon Bremer. He went through the Burmese War 1825-27, and was engaged at the siege of Ava.

In December, 1828, he received the appointment of Surveyor-General for Western Australia, the duties of which he filled with eminent success, and to the satisfaction of both government and colonists, for the long period of forty-two years. He made the colony his home, and became a member of its Legislative and Executive Council. Commander Roe* was one of the first to land in the colony of Western Australia, having arrived at the mouth of Swan River with Captain (afterwards Admiral Sir James) Stirling, in the ship *Parmelia*, on the 1st of June, 1829, and he was present when the colony was established soon afterwards by proclamation.

It fell to his duty to all the preliminary surveys of harbours, anchorages and approaches to Swan River, and it was on his reports that sites were chosen for Freemantle, the sea-port town, and Perth, the capital of the colony. For many years afterwards he was occupied in explorations and surveys of the coast, and the great unknown tracts in the interior. Thus, in 1830, he examined the country about Leschenault, the rivers Collie, Ferguson and Preston, Cape Naturaliste and Geographe Bay; in 1831, the south-western angle of the continent, visiting King George's Sound and the neighbouring places; in short, important work of this kind was performed by him almost every season until 1848-49, when he made the longer and more eventful journey from Swan River to the south-coast of Australia at Cape Pasley, and explored the desert tracts far into the interior, his narrative of which, illustrated by an excellent map by Arrowsmith, was published in the twenty-second volume of the *R. G. S. Journal*. On this hazardous and trying journey he received serious personal injury, which incapacitated him for further active work in the field.

Besides being a skilled surveyor and explorer, Commander Roe was a man of intellectual tastes, and versed in other departments of science. He was a Fellow of the Linnean Society, and made during his journeys large collections in botany, zoology and mineralogy; many a new species from that region so prolific of strange forms has been named after him. He founded a Public Museum and a Mechanics' Institute at Perth, and was for many years the president of the latter institution. He died on the 28th of May, 1878, aged 81 years. At his death a public funeral with military honours was accorded to him, his intellectual and moral worth being duly appreciated in Western Australia. Among the surveys made by him, besides those made in his earlier days in the East Indies, were:—

Port Jackson (New South Wales).
St. Asaph Bay and Port Cockburn (North Australia).
Endeavour River and Percy Islands.

He also had published in the *Nautical Magazine*, vol. xi. p. 161, 299:—

Instructions for ships from the Cape of Good Hope to the south-west coasts of Australia, as well as a series of papers, showing grounds on which he solicits promotion to the rank of Retired Commander (*8vo.* 1861.)

M. Le BARON De BOUGAINVILLE (CAPITAINE De VAISSEAU.)

1824-26.

On the 2nd March, 1824, the French frigate *Thetis*, under the command of Baron de Bougainville—the son of the celebrated navigator of the same name, who conducted in 1766 the first voyage round the world made by the French marine in *La Boudense* and *l'Etoile*—quitted Brest. Touching at the Canaries, the *Thetis* anchored at the Isle of Bourbon, where she found her consort *l'Esperance*, Captain Camper, May 20th, 1824. Sailing in a few days and having fixed the position of the southernmost group of the Maldivh Islands,

R. G. S. Journal, new series, vol. i. p. 277.

Bougainville anchored at Pondicherry, June 29th. Thence traversing the Bay of Bengal, through the straits of Malacca, by Singapore, across the China Sea to Port Cavite of Manila, Luzon.

From Manila the *Thetis* continued to Macao, and then examined the Island of Hainan, which forms the eastern side of the gulf of Tonkin. Having surveyed Tourane Bay, the expedition then sailed for Sourabaya, on the passage examining for the first time the Andaman Islands. The positions of 22 of the islands or remarkable points were accurately determined.

Proceeding to the southward, the *Thetis* ran through Gaspar Strait, reconnoitered the Carimon-Java Islands, and anchored off Sourabaya, where the ships remained for six weeks, the crews suffering much from dysentery. Afterwards steering through Allas Strait, the shores of the Island of Lombok were examined, and the road-stead of Tanjong-Louar or Peejow found to be the best on the coast. Thence rounding the south-west point of Australia and southern extreme of Van Diemen's Land, Port Jackson was reached July 1st, 1825. On the 21st September the vessels sailed for Valparaiso, thence to Rio de Janeiro, and finally anchored at Brest 24th June, 1826. Great attention was paid during this voyage to meteorological and magnetic observations. The second volume of M. de Bougainville's work contains an itinerary from Santiago de Chili to Buenos Ayres, by M. de la Touanne, who adds many fine views of scenery in Cochin China, Phillipine Islands, Java, &c.

Journal de la Navigation autour du Globe, de la frégate *la Thetis* et de la corvette *l'Esperance*, pendant les années 1824-26. Par M. le Baron de Bougainville, Capitaine de Vaisseau. 2 vols, 4*to*. Paris, 1837.

REAR-ADMIRAL F. W. BEECHEY, F.R.S.

1825-50.

Frederick William Beechey, born Feb., 1796, entered the Navy July, 1806, on board the *Hibernia*, bearing the flag in the Channel of Earl St. Vincent, attained the rating of Midshipman 8th Jan., 1807; and, until Jan., 1808, continued to serve in the same ship with Capts. Ricketts, Bedford, Conn, and Schomberg, under the latter of whom and the flag of Sir Wm. Sidney Smith, he escorted the Royal Family of Portugal on its flight to the Brazils in Nov., 1807. He next joined, with Capt. Schomberg, the *Minotaur*, stationed off Lisbon; then accompanied the same officer and Sir W. S. Smith to Rio de Janeiro in the *Foudroyant*, and, after a further attachment with Capt. Schomberg to the *President*, came home with him in the *Elizabeth*, Capt. Curzon, early in 1810. Mr. Beechey subsequently served for about a fortnight in the *Cyane*, Capt. Brenton, whence, having rejoined Capt. Schomberg in the *Astrea*, he proceeded to the Cape of Good Hope. On 20th May, 1811, when in company, off Madagascar, with the *Phœbe* and *Galatea* frigates, he assisted, after a warmly-contested action, at the capture of the *Renommée*, and, on 25th of the same month, of the *Néréide* and the settlement of Tamatave. He returned to England in Sept., 1812, on board the *Galatea*, Capt. Losack; and afterwards, until the receipt of his first commission, March, 1815, served in the *Thisbe*, Capt. Thos. Dick, lying at Northfleet, *Madagascar*, Capt. Lucius Curtis, in the Channel, *Vengeur*, Capt. T. R. Ricketts, and *Tonnant*, flag-ship in North America of Hon. Sir Alex. Inglis Cochrane. While attached to the *Vengeur* he attended the expedition to New Orleans, and was in the boats on Jan., 1815, when they swept across the Mississippi with a body of troops, seamen, and marines, to create a diversion in favour of the general attack on the American lines. As Lieutenant, his appointments appear to have been—Sept., 1815, to the *Niger*, Capt. Sam. Jackson, on the North American station—Jan., 1818, to the *Trent* hired brig, Lieut-Commander (afterwards Sir) John, Franklin, whom he accompanied in a northern expedition under Capt. David Buchan—22nd Jan., 1819, to the *Hecla* sloop, Lieut-Commander Wm. Edw. Parry, in which he penetrated to long. 113° 54′ 43″ W. within the Arctic Circle, and received in consequence part of the Parliamentary reward, amounting in his case to £200—and, 23rd Jan., 1821, to the *Adventure* sloop, Capt. W. H. Smyth. In Nov. following, having been appointed, in conjunction with his brother Mr.

Henry W. Beechey, to co-operate with the last-named vessel in conducting overland a survey of the North Coast of Africa, he set out from Tripoli for that purpose. The results of his researches, which extended as far eastward as Derna, and lasted until July, 1822, have been fully detailed in his "Proceedings of the Expedition to explore the Northern Coast of Africa from Tripoli eastward, in 1821-2; including an account of the Greater Syrtis and Cyrenaica, and of the ancient cities composing the Pentapolis." He was advanced to the rank of Commander Jan., 1822; and, in Jan., 1825, received an appointment to the *Blossom* 24, fitting at Woolwich for a voyage of discovery to Behring Strait, there to act in concert with the expeditions of Franklin and Parry in their efforts to ascertain the existence of a north-west passage.

H.M.S. *Blossom* was commissioned by Captain Beechey in the early part of 1825, who was ordered to co-operate with the second Polar Expedition, under Captain Franklin, as well as to clear up the doubtful existence of some of the islands in the South Pacific, to survey the Society Islands, and to afford assistance to Mr. Collie, the naturalist of the expedition, in making collections of his branch of research. As lieutenants under Captain Beechey were Messrs. Peard, Belcher, and Wainwright; Mr. Elson was the master, and Mr. Wolfe one of the midshipmen. On the 19th of May, 1825, the *Blossom* sailed, and on the 30th, the reef, known as the Eight Stones, was ascertained not to exist. The position of Fernanda Noronha was found on the 26th of June, 18 miles eastward of the position given in the East India Directory. Arriving at Rio de Janeiro on the 11th of July, they remained until the 13th of August. In making Cape Horn on September 16th. the ship was drifted 50 miles to the northward in 24 hours. On the 6th of October they made Mocha Island, once celebrated as the resort of buccaneers; it was found deserted by Captain Strong in 1690, and appeared to have remained uninhabited since. On the 8th of the same month they anchored at Talcahuana.

The *Blossom*, after surveying Conception Bay, put to sea on the 24th, anchored three days afterwards at Valparaiso, and on the 29th took final leave of the coast. Having determined the position of Salas y Gomez, and proved the non-existence of Washington or Coffin Island (reported by an American ship), the 17th of November found Captain Beechey off Easter Island. The gigantic busts of stone which once existed here, of which Captain Cook found only two remaining, while Kotzebue found nothing more than a square pedestal in their place, had altogether disappeared.* A serious and unpleasant dispute took place with the natives of Easter Island.

On the 28th of November the *Blossom* reached Ducie Island, discovered by Captain Edwards, of H.M.S. *Pandora*, and on December the 3rd, Henderson or Elizabeth Island, so named by the Commander of the *Hercules*, of Calcutta, though first visited by the crew of the *Essex*, an American whaler, two of whom landed here after the loss of that ship, and were subsequently taken off by an English whaler.

On the 4th of December the expedition arrived at Pitcairn Island, of which an interesting account is given, as well as of Adams and the surviving offspring of the mutineers of the *Bounty*.

On the 23rd of December Deno Island was reached, which takes its name from a whale ship whose master supposed it had not before been seen; but the discovery belongs to Captain Henderson, of the *Hercules*. Crescent Island was reached on the 27th, where about 40 natives were seen.

On the 29th of December the *Blossom* reached the Gambier Islands, discovered by Mr. Wilson commanding the missionary ship *Duff*, in 1797. This group was surveyed, and the respective islands named after members of the expedition, the whole being taken possession of, and the English ensign hoisted on shore.

Lord Hood Island, reached on the 14th of January, 1826, also discovered by the *Duff*, was

* Easter and Pitcairn Islands afford curious examples of men settling upon islands and erecting stone images, themselves becoming either extinct or abandoning such islands.

examined, and its position fixed. Clermont-Tonnerre Island, named by Captain Duperrey, of the *Coquille*, though in Captain Beechey's opinion, previously discovered by the *Minerva*, was examined, and its position geographically determined, also Serle Island.

Whit-Sunday Island, discovered by Captain Wallis in 1767, was landed on January 23rd, and found to be 12 miles in length and not four miles as had been supposed, and without inhabitants. Queen Charlotte Island, also discovered by Wallis, was approached on the same evening; here the coral had so grown up that no lagoon could be perceived in the centre, and not a single specimen of the numerous cocoa-nut trees reported by that navigator.

Lagoon Island, visited January 24th, preserved the appearance given of it by Captain Cook, and the inhabitants were found honest and friendly.

Thrum Cap Island, one of Cook's discoveries, was examined, but landing could not be effected on account of the surf. Bougainville gave this island the name of *les Lanciers*. Egmont Island, Captain Wallis's second discovery, was examined on the 25th of January, but without landing.

On the 26th of January, 1826, Barrow Island (named after the second secretary of the Admiralty, afterwards Sir John Barrow) was discovered by Captain Beechey; it was examined and is described in his narrative. The position of Carysfort Island, of Captain Edwards, was determined on the 2nd of February. The next island visited was Osnaburgh of Carteret. The lagoon was entered by the *Blossom*. It had apparently never been inhabited, the birds being so tame as to allow themselves to be lifted from their nests, while fish were taken as easily by sticks and boat-hooks as by lines.

Lagoon Island (of Captain Bligh) was not landed upon, but its geographical position was determined, and remarks as to the natives were made.

Byam Martin Island, discovered by the *Blossom*, was examined, also Gloucester Island (Wallis), and Bow Island,* discovered in 1768 by Bougainville. The *Blossom*, having navigated with considerable difficulty and some danger through a channel in the coral reef, was enabled to anchor in the lagoon. Water was procured in abundance by digging holes in the sand.

Between Bow Island and Otaheite the positions of the following islands were determined, Melville Island and that of Croker being new discoveries (the former taking its name from Lord Melville, the first Lord of the Admiralty, the latter from Mr. Croker, the first secretary): Moller, Resolution, Cumberland, Prince William Henry (or Lostange), Dawahaidy, Maracan, Doubtful, Melville, Bird, Croker, Maitea. The discoveries of Cook and Wallis, in the track of the *Blossom*, were relatively correctly placed; but those of Wallis were found as much as 40 miles in error in longitude, and several miles in latitude, which occasioned two of them to be mistaken for each other by Bellingshausen, and one to be considered a new discovery by Captain Duperrey; but Captain Beechey considered that this navigator's Lostange is the same as Wallis's Prince William Henry Island. Of the 32 islands visited 12 were inhabited, and the amount of the population was set down at 3,100 in all, of which 1,000 belong to the Gambier Islands, 1,260 to Easter Island, leaving 840 persons only to occupy the other 30.

Matavai Bay, of Otaheite, was reached March the 18th, 1826, and left on the 26th of April, on which date Tetharoa was reached, and Honolulu anchored at on the 20th of May. On the 1st of June they hauled into Oneehow, the westernmost of the Sandwich Islands, where Vancouver anchored. Leaving this island Captain Beechey shaped course for Kamschatka, deviating from the tracks of Cook and Clerke, passing eastward of Bird Island, and on the 28th of June anchoring off Petropaulski. On the 4th of July this harbour was left, Behring Island passed close to, and on the 17th St. Lawrence Island communicated with. On the 19th of July they saw the island of King, which is described as small, but high and rugged.

After sighting the Diomede Islands, fifty miles distant, and doubling Cape Prince of Wales, they were becalmed in Schismareff Inlet. From this inlet they sailed northward, and entered Kotzebue Sound on the 22nd of July, discovered Hotham Inlet and proceeded

* Bow Island was one of the islands visited by Sir Thomas Brassey in his yacht *Sunbeam* in 1874.

directly to Chamisso Island, the rendezvous appointed (with Franklin) on the 26th of July, only five days behind the appointed time, subsequently examining the coast for a considerable distance to the north-east in the *Blossom*, and in the barge, which attained a western longitude of 156° 21′ at Point Barrow.

The expedition was unsuccessful in obtaining any information of the proceedings of Sir John Franklin, in this, their first visit to the Polar seas, and equally so in their return to the same latitude in the following year. The farthest tongue of land which Mr. Elson reached in the *Blossom's* barge was named Point Barrow. It lies 126 miles to the north-east of Icy Cape, and is only 146 miles from the extreme of Sir John Franklin's discoveries in his progress westward from the Mackenzie River.

Captain Beechey left Kotzebue Sound on the 13th of October, 1826, passing Cape Krusenstern, King Island, and the group of St. Paul, sailing through the strait westward of Oonemak, which is 9½ miles across. On the 8th of November he arrived at San Francisco, continuing to Monterey and thence to the Sandwich Islands, searching for Henderson and Cooper Islands *en route*. Captain Beechey anchored again at Honolulu on the 26th of January, 1827. After a stay of 30 days at Honolulu, Assumption Island was passed on the 25th of March, the channel between Botel Tobago, Xima, and the Bashee Islands taken, and Macao arrived at April the 10th.

From thence Captain Beechey sailed for the Loo Choo Islands, where a survey of the port of the town of Nepa, or Papa Ching, was completed, and several excursions made. Loo Choo was sailed from May the 25th, 1827, and on the 6th of June the spot assigned to the Island of Disappointment was passed without seeing land. On the 8th they reached the Bonin Islands,* surveying and naming Port Lloyd in Peel Island, and a large bay at the north-east angle of the same island, Fitton Bay; Parry Islands was the name given to the northern cluster of the Bonin Islands, and Bailey Islands to the southern cluster. Captain Beechey now again steered for the north, in order to try and gain tidings of Sir John Franklin, but without success. In the course of his voyage of this season he discovered Port Clarence and Grantley Harbour, and named York promontory as well as Spencer and Jackson points at the entrance of the former port. In October, 1827, he returned from the north, and on the 29th anchored at Monterey, remaining at anchor in this harbour until November the 17th, when he sailed for San Francisco. The *Blossom* afterwards put into San Blas and Mazatlan, taking the opportunity of examining the Tres Marias and Isabella Islands, an account of which he gives. On the 29th of March, 1828, crossed the equator in 99° 40′ W., and arrived at Valparaiso on the 29th of April. On the 23rd of May they arrived at Coquimbo, from which they finally put to sea, on their way to Brazil, passed the meridian of Cape Horn on the 30th of June, and arrived at Rio de Janeiro on the 21st of July. After a passage of 49 days they arrived at Spithead, and on the 12th of October, 1828, the *Blossom* was paid off. Captain Beechey had been advanced to post rank on the 8th of May, 1827.

His next appointment was in September, 1835, to the command of H.M.S. *Sulphur*, to continue the survey of the South American coast, where Captain Fitzroy had terminated his operations in the *Beagle*. He returned from Valparaiso in the autumn of 1836, on account of ill-health, and was succeeded by Captain E. Belcher.

Captain Beechey was employed from 1837 until 1846 in the *African*, *Lucifer*, and *Firefly* (the last of which vessels he paid off Oct., 1847), in executing a general survey of the Irish Sea. During that period he made a number of valuable reports, viz.,—one in 1837, on the Post Office communication between the North of Ireland and Scotland, and on the harbours best adapted to that purpose—another, in 1839 (having been appointed a joint Commissioner for the inquiry with Rear-Admiral Sir James Alexander Gordon), on the best line of communication between London and Dublin—in 1842, one on the works at Fleetwood, and on the best mode and probable expense of improving that port; and a second, on the lands

* Captain Beechey considered that the Bonin Islands correspond with the Ysles del Arzobispo described in the Navigacion Especulativa y Pratica, published at Manila, and not with the account of them by Abel Remusat and Klaproth, taken from Japanese documents.

which had been reclaimed, and on the encroachments which had been made on the rights of the Duchy of Lancaster around Fleetwood and on the Wyre—one, in 1845, on a proposed embankment on the northern shore of Belfast Channel, and on the construction of a railway along it—and several, in 1846, on Holyhead Harbours, besides one on the navigation of Menai Strait, and on certain suggestions for its improvement. He also prepared a memorial of artificial harbours constructed at Government expense in the Irish Sea, and a report on a plan proposed for improving Ardglass, and for constructing a harbour of refuge at Douglas, in the Isle of Man.

Having paid off the *Firefly*, Captain Beechey was in succession nominated Additional Captain of the *Caledonia*, *San Josef*, and *Impregnable*. In 1848, he executed a survey of the Severn, from Worcester to Minehead. He had charge, in the course of the same year, of the pilotage of the Royal Squadron on the occasion of the Queen's visit to the Western Islands of Scotland; and again, in 1849, when Her Majesty visited Cork, Waterford, Dublin, and Glasgow. From 1850, Rear-Admiral Beechey (who obtained flag rank Sept., 1854), filled an appointment at the Board of Trade, to which he became attached for the purpose of superintending and organizing the Mercantile Marine. In the course of the same year he reported upon Hull. In 1851, he was sent to quell the riots among the seamen at the north-eastern ports, and was nominated an Aide-de-camp to the Queen and a member of the committee assembled to consider the best means of searching after Sir John Franklin. In 1852, he was appointed to a committee on lights for sailing vessels, and also to a commission ordered to frame a report, which was laid before Parliament, on the western ports of Ireland with reference to the establishment of a Transatlantic Packet Station. During the same year he was employed to lay down the submarine telegraph between Holyhead and Dublin. In addition to other published productions of this officer, was an able paper on Hydrography contributed by him to the Admiralty Manual in 1848; and two others, published by the Royal Society in 1852, on the Theory and the Course of Tidal Streams in the Irish Sea, English Channel, and German Ocean. The papers last named were the means, as may be found detailed in the Transactions of the Archæological Society for 1852, of enabling the Astronomer Royal, Professor Airy, to determine the spot at which Julius Cæsar landed on our shores. Rear-Admiral Beechey, who was a Fellow of the Royal and Astronomical Societies, died President of the Royal Geographical Society in November, 1856.

The following books and charts were the results of his labours:—

Voyage of Discovery towards the North Pole in H.M.S. *Dorothea* and *Trent*, under the command of Capt. D. Buchan, in 1818; with a summary of all the early attempts to reach the Pacific by way of the Pole, 8*vo*. 1843.

Proceedings of Expedition to explore the North Coast of Africa from Tripoli eastward, in 1821-22, with accounts of Greater Syrtis and Cyrenacia, and of the ancient cities composing the Pentapolis, 4*to*. 1828.

Voyage to the Pacific and Behring's Strait, in H.M.S. *Blossom*, during the years 1825-28, 2 vols. 4*to*. 1831.

Report upon the tides of the Irish Sea, and of the similarity of tidal phenomena of the Irish and English Channels, 1848.

Report of observations made upon the tidal streams of the English Channel and the German Ocean, 1851.

Tidal phenomena of the River Severn, 1851.

Description of the Double Sextant. Hydrography (Admiralty Manual).

The Use of the Lead, or how to correct soundings.

Report on the Mercantile Marine Act, 1851.

Napha Kiang Road (Northern China).

Avatcha Bay, Petropaulski.

Outer Avatcha Bay.

Rodney Point to Barrow Point, with plans of Chamisso, Clarence and Grantley Ports.

Mazatlan Harbour, Chamatla River, Ports Sihuatanejo and San Blas.

Gambier Islands (South Pacific).

Parts of Otaheite and Gimeo Islands.

Heyow (Bow or Harp) Island

Pitcairn Island.

Two sheets of the Irish Channel.

Belfast Lough.

Campbellton Loch.

CAPTAIN R. COPELAND, R.N.

1825-34.

Richard Copeland, born 5th March, 1792, was a son of the late John Copeland, Esq., of the 7th Fusilier Guards, and Staff Surgeon to H.R.H. the late Duke of Kent when Governor of Nova Scotia. This gentleman, together with his wife and youngest son, was lost in the *Frances* transport, off Sable Island, in December, 1799.

This officer entered the Navy 1st January, 1805 (under the auspices of Queen Charlotte and the Princess Augusta), as a first-class volunteer on board the *Medusa* 36, Captain Sir John Gore; and, on removing to the *Revenge* 74, witnessed the capture of four French frigates by Sir Sam. Hood's squadron off Rochefort 25th September, 1806. He was present, in 1809, at the destruction of the French shipping in Basque Roads and the siege of Flushing. In September, 1810, he rejoined Sir John Gore, as midshipman, in the *Tonnant* 80, and after serving for some time with the British Army in the *Tagus*, and with Captain Jas. Brisbane in the *Belle Poule* 38, was promoted to the rank of Lieutenant 11th December, 1811. From 11th February, 1812, until wrecked off the mouth of the Comantine River, 8th March, 1815, Mr. Copeland next served on board the *Cygnet* 18, Captain Robert Russell; and being promoted 13th June following, was afterwards appointed 7th September, 1825, to the command of the *Mastiff*, in which he remained surveying in the Mediterranean until 4th February, 1830, when he was succeeded by Lieutenant W. J. Cooling, who was succeeded in turn by Commander James Wolfe on the 22nd November of the same year. The *Mastiff* was paid off and re-commissioned by Lieutenant Thomas Graves in May, 1832. On the 4th February, 1830, Commander Copeland was appointed to the surveying ship *Meteor*, alias *Beacon*, on the Mediterranean station. While at Gibraltar on one occasion he seized a notorious pirate; and, in 1834, he took captive, near Thasos, another famous marauder, Kara Mitzos, with 160 of his men, all of whom were delivered over to the Greek government. Being, however, liberated without trial, these plunderers resumed their former atrocities with redoubled zest, and falling again into the hands of Captain Copeland were sent to the Pacha of Thessalonica, by whom they were executed. Captain Copeland was placed on half-pay February, 1836, and was promoted to Post rank, at the instance of Her Majesty, 28th June, 1838.

He published "An Introduction to the Practice of Nautical Surveying and the construction of Sea Charts, &c.," translated from the French of C. F. Beautemps Beaupré, Hydrographer of the French Marine.

Numerous surveys of ports and islands in the Grecian archipelago were made under his superintendence.

COMMANDER P. STOKES, R.N.

1825-28.

Pringle Stokes, the elder of the two surveying officers of that name, which were distinguished about this period, was made a lieutenant on the 2nd of March, 1815.

From June, 1815, to 1820, he served in the *Leda*, of 36 guns, under Captain George Sayer, in the East Indies, and subsequently in the *Iphigenia*, Captain Sir Robert Mends, from July, 1821, to December, 1823, in which latter month he was promoted to Commander. He appears then to have remained on half-pay until appointed on the 7th September, 1825, to command the *Beagle* brig, of 10 guns, for the survey of the South American coast and Magellan Strait.

Under him as a supernumerary lieutenant and assistant surveyor served Lieutenant W. G. Skyring.

The difficulties which the *Beagle* experienced in buffeting about in the neighbourhood of Cape Horn and Magellan Strait fairly wore her Commander out. He died November 23rd, 1828, a victim to over exertion, worry, and excitement, attendant upon surveying labour conducted in this part of the world in a ten gun brig.

ADMIRAL ZAHRTMANN (Danish).

1825-26.

This officer entered the naval service as a cadet in 1805, and served as a lieutenant in many arduous services during the remaining years of the old war. He was employed afterwards in the measurement of an arc of the meridian, under Professor Schumacher. After a cruise to the West Indies, during which he made a chart of a portion of those Seas, and set up an observatory at St. Thomas, he was appointed successor to Admiral Lövernön as director of the Hydrographic office. When a lieutenant in the West Indies during the years 1825-26, he connected chronometrically such points as his vessel visited. He had with him three chronometers. In 1833-34 he again resumed the same task, and a few of his positions were for some time adopted on the Admiralty charts.* The works on which his fame chiefly rests are the charts of the coast of Denmark, and especially that of the North Sea (1843). The "Danish Pilot," which contains a complete description of the seas surrounding Denmark, was translated, under the direction of Sir Francis Beaufort, into English and French.

Admiral Zahrtmann died in April 1853. Some eulogistic stanzas upon the deceased were written by Rear-Admiral Steen Bille, who commanded the *Galathea*, corvette, on her voyage round the world.

LIEUTENANT D. H. KOLFF (Netherlands).

1825.

This voyage, which was performed in the Dutch colonial brig *Dourga*, was undertaken by the Netherland's government for the purpose of obtaining information respecting the islands lying between Timor and the South-West Coast of New Guinea. The Dutch East India Company formerly had small settlements and spice plantations on many of these islands; but towards the close of the 17th century they had been abandoned, and since then scarcely any intercourse had existed between the inhabitants and the Dutch. May the 26th, 1825, the *Dourga* left Amboyna, and on the 2nd of June arrived at the Portuguese settlement of Dilli, on the North Coast of Timor. June 6th the brig left Dilli and stood over to the South Coast of Wetta, Kissa, Lettee, Moa, Damma, Lakor, and Luan, the principal islands of the group, and lying north and north-east of Timor, were subsequently visited.

Kolff's work was afterwards added to and corrected by Lieutenant Modera, in the corvette *Triton*, in 1828.†

ADMIRAL, COUNT F. LÜTKE (Russian)

1826-29.

Frederic Lütke entered the Russian Navy at the age of sixteen, and in 1817-18 made his first circumnavigation of the globe under the command of Golovine. During four successive summers (1821-24) he was employed in surveying the coasts of Novaya Zemlya, and the narrative of these voyages forms one of the richest sources of our knowledge of that part of the Arctic Regions.

September the 1st, 1826, the corvettes *Séniavine*, Captain Frédéric Lütke, and *Moller*, Captain Stanioukovitch, of the Russian Navy, left Kronstadt for a voyage round the world. After touching at Teneriffe and Rio de Janeiro, and rounding Cape Horn in latitude 61° S., and calling at Conception and Valparaiso, the *Séniavine* crossed the equator on her way to the northward, not making land until on the 23rd of June, 1827, she sighted Mount Edgcumbe, an extinct volcano, rising 2,800 ft. above the sea, and on the following day

* Astron. Nach. Nos. 113 and 305. Conn. des Tem. 1839. For notice of life and labours of Admiral Zahrtmann, see *Journal* of *Royal Geographical Society*, vol. 23, page lxvi.

† See *R. G. S. Journal* for 1837, vol. vii.; also "Sailing Directions to accompany Chart of Arafura Sea," by J. Earl, Admiralty, 1838. These are compiled from Lieutenant Kolff's Journal.

anchored off the settlement of Novo-Arkhangelsk, the residence of the Governor of the Russian colonies, whose jurisdiction extends over the Aleutian and Kurile Islands.

August the 1st, the *Séniavine* sailed for Oonalaska, on quitting which a north-west course was made towards the islands of Pribyloff and St. Matthew. The islands of St. Paul and St. George, with a few smaller ones, were called by Captain Lütke the Pribyloff, after the pilot who discovered them in 1786. St. Matthew Island, so named by Lieutenant Sindt in 1766, and afterwards termed Gore Island by Cook in 1778, was thoroughly examined and described by Dr. Mertens, M. Postels and Baron Kittlitz, naturalists to the expedition.

The autumn approaching the *Séniavine* steered for Kamchatka, touching at Behring Island, and thence continuing to Petropaulski, where she remained until the end of October.

On November 1st the same vessel sailed for the Caroline Islands, passing over on the way, the position formerly assigned in American charts to Culinas Island, in lat. 28° 9′, long. 128° W. Also, for Dexter and St. Bartholomew Islands, but in like manner, without success. December the 4th she sighted Strong, or Ualan Island, of the Caroline group, anchoring in Coquille Bay on the 10th, where a stay of three weeks was made.

Captain Lütke returned to Cronstadt after an absence of three years and five days. The principal geographical results of this expedition were the determination of the positions of the chief points on the eastern coast of Kamchatka, of the country of the Koriaks and of the Chukches, from the bay of Avatcha to the north-east point of Asia; also of the islands Karaghinsk, St. Matthew, Pribyloff, &c., in Behring Sea; the archipelago of the Carolines examined, from the island of Ualan on the east to the group of Uluthy on the west; twelve islands discovered, and twenty-six detached groups or islands described; as also the islands of Bonin Sima. The *Moller* had in the meantime discovered Moller Island in 25° 46′ N. lat., 171° 50′ W. long., and examined the chain of islands and reefs which extend north-west from the Sandwich Islands. She discovered, also, a dangerous reef six miles S.S.W. of Lisiansky Isle, and afterwards surveyed the north-western shore of the peninsula of Alaska. Experiments with the invariable pendulum were made at nine stations, besides magnetic and meteorological observations. Rich zoological collections were made, which included 300 species of birds, 300 of fish, 700 of insects, and 150 crustacea. The botanical collections comprised 2,500 specimens of dried plants and of *Algæ*; and 330 specimens of rocks were brought from the various points touched at. The ethnographical results included a vocabulary of upwards of 200 words and phrases, besides the numerals, in four dialects of the language of the Caroline Islands, compared with several other dialects of Polynesia; also descriptions and portraits of the Chukches, the Koriaks, the natives of the Caroline group, &c., and the Bughi, of Celebes; a collection of costumes, arms, ornaments, &c. In the course of the voyage 1,250 drawings were made, some of which give an excellent idea of the characteristic vegetation of tropical climes. A detailed account of this memorable voyage and its rich results was published, under the title of "Voyage autour du monde sur la Corvette le *Séniavine* en 1826-29," in 1835 *et seq.* The geographical portion of the work is illustrated by various plans, charts, views of headlands, &c.; and, more especially, by an excellent chart of Behring's Sea. The third volume was the joint production of Dr. Mertens, M. Postels, and Baron Kittlitz, naturalists to the expedition, and contains much valuable information on geology and natural history. For this voyage, the Demidoff premium was conferred upon Captain Lütke by the Academy of Sciences at St. Petersburg.*

Within a few years of the return of the *Séniavine*, Lütke was nominated aide-de-camp to the Emperor, and governor—afterwards guardian—to the Grand Duke Constantine Nicolaivitch. He passed rapidly through the various grades of the military and administrative services, and was made aide-de-camp general in 1842, vice-admiral in 1845, naval governor and commandant of the port of Revel in 1851, and was transferred some years later to Cronstadt in the same capacity. In 1855, he was nominated member of the Imperial Council, and was raised to the rank of Count on the fiftieth anniversary of his entering the service. For many years he directed the work of the Imperial Russian

* Abridged from Proceedings of R. G. Society, 1882.

Geographical Society as Vice-President—the President's chair being occupied by the Grand Duke Constantine Nicolaivitch—with all the zeal and activity which characterised him to the last. He retired a few years ago, "to make room for the young ones," as he was fond of saying, but he never ceased to take a considerable interest in hydrographic work, and to support its various enterprises. In 1869, he was called upon by the late Emperor to succeed Count Bloudow as President of the Academy of Sciences, and he occupied this post to within a few months of his death, when advancing age and infirmities compelled him to ask to be superseded.

With the Caroline Islands we were very imperfectly acquainted in detail, until a short time previous to this voyage, when Captain Duperrey in the *Coquille*, in 1824, ran through their whole extent from east to west, discovering many small islands and surveying Ualan in detail. Space was, however, left for Captain Lütke to work in, who, in his examination of this group visited each island, thus obtaining a complete acquaintance with the geographical position of each, as well as information relative to the manners and customs of their inhabitants, and a short vocabulary of their language; also an account of the structure and natural history of the islands. The centre of Ualan Island was ascertained to be in lat. 5° 19′ N., long. 163° 6′ E.

January 10th, the *Séniavine* sought in vain for two small islands in lat. 5° 12′ N., long. 160° 55 E.; and on the 13th with as little success for the Musgrave Islands, in lat. 6° 12′ N., long. 159° 15′ E. On the 14th three groups of islands extending between 6° 43′ and 7° 6′ N. latitude, and 158° and 158½° E. longitude, were discovered. To these the name of Séniavine was given, and separately they were termed Pouynipete, Andema, and Kapenuare, by Captain Lütke. Having looked for St. Augustin Island of Freycinet's chart, in lat. 7° 18′ N., long. 158° 6′ E., Los Valientes, of Tompson, in 1772, (Ngatik of the natives), were sighted and described.

February 3rd the Matlock Islands (1795), Lugunor of the natives, according to Captain Lütke, were found to be composed of three groups of coral islands, 90 in number, Lugunor, the most eastern group, being 18 miles in circuit. February 14th, determined the Island Quirosa, of the Spanish pilot, and Hogolen, of Duperrey, to be called by the natives Hong. Examined the Namonuito group and thence proceeded to Guam, of the Mariana Island to re-fit.

March 20th, returned to the Caroline Islands, and examined the group of Swede Islands, or Namourak; thence to the westward to the group of Faroilap, Ifalouk, and Ouleai (the 13 isles of Wilson), composed of 22 islands, and 15 miles in circuit.

April 9th, the *Séniavine* sailed for Kamchatka, touching at the Bonin Islands, and again anchored at Petropaulski, whence, after a stay of three weeks, the corvette steered along the coast to the north-east fixing the positions of various capes and headlands and ascertaining the altitude of the volcanoes of Kronotsky and Kamchatskoi, to be 10,610 and 16,512 feet respectively.

July 5th the island of Karaghinsky was examined, which, with the adjoining coast, had not been seen by any known navigator except Sindt. From this island Cape Ilpinsky was visited, and thence course was steered through Behring Strait, and on the 28th anchorage was found in the bay of St. Lawrence, 30 miles southward of the east cape of Asia.

Returning to the southward, a strait to which the name of Séniavine was given was found in lat. 64° 45′ N., between two islands and the main land. From the bay of St. Lawrence course was then shaped to the westward into the gulf of Anadyr, and the bay of St. Croix surveyed.

Having ascertained the latitudes and heights of six of the most prominent of the volcanoes of the peninsula of Kamchatka, and spent five weeks in the harbour of Peter and Paul, the *Séniavine* sailed on the 11th of November for Manila, reconnoitring on her way such of the Caroline Islands which she had not before visited.

December the 10th, the Lütke or Mourileu group was discovered and examined, and its centre found to be in lat. 8° 40′ N., long. 152° 8′ E. December the 20th, sighted Fey's Island,

and the following day made the Mackenzie Islands (Uluthi, of the natives), consisting of two groups, on one of which Faraulep, a century before Captain Lütke's visit, the Spanish Jesuit, Padre Cantova, established a mission; and in 1732, on the neighbouring island of Mogmog, fell a martyr to his zeal.

The *Séniavine* arrived at Manila January the 13th, 1829, and ultimately, after touching at St. Helena and Havre, at Kronstadt, in September, after an absence of three years. The summary of her voyage may be said to have consisted of the determination of the chief points on the eastern coast of Kamchatka, and from the Bay of Avatcha to the north-east point of Asia; also, of the islands of Karaghuisk, St. Matthew, Pribyloff, &c., in Behring Sea. Examined the Caroline Archipelago from Ualan Island on the east to Uhitby on the west, twelve islands discovered, and twenty-six small groups described.

Rear-Admiral Lütke drew up a useful hydrographic memoir from many Russian and other sources besides giving the narrative of his own voyage. He died on the 20th August, 1882, at the age of 85 years.

The following were published by Rear-Admiral Lütke:—

Viermalige Reise durch das Nordliche Eismeer auf der Brigg Nowaja Semlja in deu jahren, 1821-24. 8*vo*. *Berlin*, 1835.

Voyage autour du Monde exécuté sur la corvette, *le Séniavine*, dans les années, 1826-29. Three vols. 8*vo*. and folio Atlas. *Paris*, 1835.

CAPTAIN D'UMONT D'URVILLE (French).

1826-39.

Among the illustrious navigators who have enriched science by their exertions, Jules Sébastien-César Dumont D'Urville deserves a conspicuous place. His first expedition, in the *Astrolabe*, left Toulon April 22nd, 1826. He examined parts of the coasts of New Zealand, the Tonga Islands, the Fiji Islands, the Santa Cruz Islands, the Loyalty Islands, and the great chain of reefs extending off New Caledonia. He then passed on to New Britain and New Ireland, and the north coast of New Guinea. On his return to Hobart Town he received intelligence that Capt. Dillon had discovered the remains of La Pérouse's expedition, to the scene of the loss of which, at Vanikoro Island, he then repaired. Quitting this, he passed on to Guam and part of the Carolines, arriving at the Mauritius September 29th, 1828, and at Toulon March 25th, 1829. More extended examinations have since been made of many of his explorations, but he greatly increased our then imperfect knowledge existing at the time.

The second expedition under M. D'Urville, consisting of the *Astrolabe* and *Zelée*, the latter under the command of Capt. C. H. Jacquinot, quitted Toulon September 7th, 1837, and reached the South Shetland group, where he made many additions to our knowledge; thence entering the Pacific, he visited Manga Reva, Marquesas, Society Islands, Tonga Islands, the Fiji Islands, Vanikoro, the Salomon Islands, the Ladrone Islands, and then entering the Asiatic Archipelago, continued thence to Hobart Town. Quitting this, he made for the antarctic regions, and discovered portions of the supposed continent. He then again examined some portions of New Zealand, the Louisiade Archipelago, thence out of the Pacific, and reached Toulon November 6th, 1840. During this voyage he discovered la Terre Adèle and Clarie. In 1841, he received the honorary distinction of the medal of the Geographical Society of Paris.

The death of this celebrated navigator will be long remembered in France. D'Urville, with his wife and son, were travelling on one of the Paris and Versailles railways, when in consequence of the engine failing, the whole train was overturned and burnt, together with upwards of forty of the passengers.*

The results of D'Urville's first voyage were published in Paris in 1830, in 11 vols. of 8*vo*. and a large atlas of charts. The out-put of the second voyage was published in 1847, in 16 vols. of 8*vo*., and a folio atlas of charts.

* From Findlay's *Pacific Pilot*, p. 20.

CAPTAIN DILLON.

1827.

In September, 1813, the Bengal ship *Hunter*, Captain Robson, touched at the Fiji Islands for a cargo of sandal wood. While the *Hunter* lay at anchor at one of these islands, with the crew of Europeans on shore, the natives rose and massacred all but three. Martin Bushart, a Prussian, with his Fiji wife, and Achowlia, a Lascar, took refuge on board the *Hunter*, and were, at their own request, set ashore at Tucopia or Barwell Island, at the south-east extremity of the Queen Charlotte Islands.

In May, 1826, Captain Dillon, who had been an officer of the *Hunter* during the voyage of that ship to Fiji, and was one of the three Europeans who escaped from the hands of the islanders, while returning from Valparaiso to Pondicherry in a vessel called the *St. Patrick*, touched at Tucopia, and the Lascar, with Bushart, came off to the ship. The Lascar had in his possession a silver sword guard, and Bushart related that on his first arrival on the island he found there several iron bolts, axes, knives, tea cups, one silver spoon and other articles of French manufacture. He found that these had been brought from Manicola by the natives, and upon inquiry learnt from them that many years before two ships had been cast away on the shores of that island. The crews got safely on shore and built a small vessel, in which they sailed, leaving behind them a few of their number. The Lascar had visited Manicola and seen two of these Europeans, but could not be induced to return to that island.

Captain Dillon induced Bushart to sail with him to search the islands to windward, but when within sight of Manicola it fell calm, and he was compelled in consequence not to delay the further prosecution of his voyage to Pondicherry.

On his arrival in India he lost no time in informing the Government of the clue which he thought he had discovered respecting the fate of La Pérouse, and of his own fitness to follow up the inquiry. This application met with due attention, and in January, 1827, the *Research*, at that time employed in the survey of the Mergui Archipelago, was placed under his command. At Tucopia, Captain Dillon obtained a pilot and interpreter, and then proceeded to Manicola, which, after surveying, he found to be almost entirely surrounded by a coral reef. From the natives he ascertained that one of the ships had struck at a place called Whannow and had sunk in deep water, the other ran on the rocks near Paiou, and from her the strangers landed and remained on the island five months, during which time they built their small vessel. On examining the coral reef, several brass guns were discovered and raised. From the natives he purchased the backboard of a ship ornamented with a fleur-de-lis, a ship's bell with the inscription *Bazin m' a fait*, a great quantity of iron bars and bolts, fragments of china, and of barometer tubes with other articles. In April, 1827, he returned to Calcutta.

On arrival in Paris in February, 1828, with the relics of the French expedition, Captain Dillon was liberally recompensed for his exertions by Charles X. with a pension of 4,000 francs and the cross of the Legion of Honour. Of the two Frenchmen who had been seen by the Lascar, one had died at an advanced age, about three years before Captain Dillon's arrival in 1827; the other had followed the fortunes of a chief with whom he was allied, and who, being worsted by his enemies, had retired to one of the neighbouring islands.*

COMMANDER T. BOTELER, R.N.

1827-28.

Thomas Boteler obtained his commission as a Lieutenant on the 15th September, 1815, and served for some time on the Home Station.

When the *Leven* and *Barracouta* fitted out for the survey of the east coast of Africa in August, 1821, he was appointed as second Lieutenant of the former vessel under Captain W. F. Owen.

* Abridged from Cooley's *Maritime Discovery*, vol. 3.

Upon the death of Captain Cutfield, who commanded the *Barracouta* at Delagoa Bay, Captain Owen having appointed his first Lieutenant, Vidal, to the vacancy, Lieutenant Boteler was transferred with him as first Lieutenant of the vessel, and in that capacity continued to serve during the remainder of that extensive voyage. The proceedings of the *Barracouta* throughout the expedition, whenever quoted in the narrative of Captain Owen, are from Lieutenant Boteler's journal. Having paid off the *Barracouta* as first Lieutenant he was promoted to the rank of Commander September 26th, 1826, and was again appointed on the 24th of December, 1827, to the command of the *Hecla*, for the continuance of the survey of a part of the west coast of Africa, left incomplete during the former commission.

An historical memoir he prepared of Princes Island and Anno Bom was published in the Journal of the Royal Geographical Society of 1832, and at page 78 of the *Nautical Magazine* for 1835 will be found an exhaustive account of Magador, drawn up by him a short time previous to his premature decease. In both instances the subjects appear to be treated in a most searching and exhaustive manner.

He died in the year 1828, from the effects of fever brought on in the course of the survey of the coasts of Africa, in which he was so long engaged.

Throughout nearly the whole commission of the *Barracouta*, under Commander Vidal, he was not only first Lieutenant, but the principal Surveyor, and is spoken of by Captain Owen, who had command of that expedition, as one of the most scientific of his officers.

Charts published from Commander Boteler's surveys, made in the *Hecla*:—

Cape Verde to Cape Roxo.
Foreecarreah and Mellacoree Rivers.
Salm and Joobas Rivers.
Scarcies River.
Tannanly, Mahneah, and Morebiah Rivers.
Princes, St. Thomas, and Anno Bom Islands.

COMMANDER HENRY FOSTER, R.N.

1828-31.

A particular interest attaches itself to the above officer, as he may be said to have died in harness, when the results of one of the most interesting voyages on record, under his command, had been well-nigh achieved. The voyage of the *Chanticleer* to the South Atlantic Ocean for the purpose of making scientific observations, and swinging the pendulum at certain places, the object being to arrive at more definite conclusions concerning the figure of the earth, compiled as it was from the journal of Dr. Webster, the surgeon of the ship, by Lieutenant H. B. Becher, at the special request of Captain Beaufort, is well worthy of perusal by all scientific sailors.

Commander Foster was the eldest son of the Rev. Henry Foster, of Woodplumpton, near Preston, Lancashire. Born in 1796, he was originally intended for the church, but entered as more congenial to his tastes, the naval service, as a volunteer, in 1812, in H.M.S. *York*. He then served in the *Vengeur*, 1815, *Eridanus*, 1817, *Blossom*, 1817, *Creole*, 1819, *Conway*, 1820, *Griper*, 1823.

When in the *Blossom* he surveyed the mouth of the Columbia River, and in the *Creole* he made a survey of the north shore of the River Plate. In the *Conway*, under Captain Basil Hall, he made some excellent observations with the pendulum, thereby obtaining admission to the Royal Society. In 1824 he was made a Lieutenant, and sailed in the *Fury*, under Sir Edward Parry, which was lost in Prince Regent's Inlet, as astronomer to the expedition. During the Arctic Winter he made experiments in magnetism, refraction, and the velocity of sound, besides astronomical observations. For these (published in the Philosophical Transactions for 1826), he received the Copley Medal of the Royal Society, and in half-an-hour afterwards his Commander's rank. He was then appointed to the *Chanticleer*. The instructions drawn up by a Committee of the Royal Society, consisting of Davis Gilbert, Captain Beaufort, Dr. Fitton, Mr. Herschel, Captain Kater, Dr. Roget and Captain Sabine, were signed by the hydrographer, Sir Edward Parry, and James Horsburgh (of East Indian Directory fame).

The *Chanticleer* was a barque rigged sloop of 237 tons, built in 1804, at the Isle of Wight; pierced for ten, she carried only two guns for this voyage. Among her officers were Lieutenants H. B. Austin, Williams and E. N. Kendall—the first afterwards of Arctic fame—the others of marked hydrographic skill. Lieutenant Kendall wrote the hydrography of the voyage in the form of an appendix, and also contributed the illustrations. He had been trained as a youngster under Captain Martin White in the *Shamrock* on the home coasts and English Channel. We read in this voyage of the use of Sixs' thermometer (deep sea) and Dr. Marcet's iron water bottle coming into use. Commander Foster, at the early age of 36, was drowned in Chagres River, February 5th, 1831, while engaged measuring the difference of longitude between Panama and Chagres, falling overboard from a canoe. The command of the vessel at his death devolved on Lieutenant Austin, and the *Chanticleer* under that officer, arrived at Falmouth 17th May, 1831. A tablet to the memory of the deceased was erected at the port of St. Lorenzo and another at Chagres. His body, shrouded in the colours of his country, was buried near the spot where it was found, a board carved by Lieutenant Williams, with particulars, &c., of his death being affixed to a lofty tree. Besides this, a monument to his memory was erected in the church of his native village. The *Chanticleer* carried 17 chronometers, and in the course of the voyage called at Madeira, Teneriffe, St. Antonio, Penedo de San Pedro, Fernando Noronha, Abrolhos, C. Frio, Rio, St. Catherine I., Monte Video, Staten Land, Cape Horn, S. Shetland, Terra del Fuego, Cape of Good Hope, St. Helena, Ascension, Fernando Noronha, Maranham, Para, Port Spain, La Guayra, Porto Bello and Chagres, where the unfortunate accident occurred.

The results of the pendulum experiments proved of the highest value, although differing from the results obtained by Captain Sabine 1822-23, and Freycinet.

See Narrative of a voyage to the South Atlantic Ocean, 1828-29-30, in H.M.S. *Chanticleer*, in two vols. 8*vo*. *Bentley, London*, 1834.

He was credited also with the following charts :—

Huacho Bay, Ports of Casma, and Chilca Harbour (Peru).
Port of St. Blas (California).
Bay of Arauco (Chili).
Port of Huasco ,,
Port of Copiapo ,,

COMMANDER WILLIAM MUDGE, R.N.

1828.

The above-named officer died at Howth while conducting the Admiralty survey of the coast of Ireland, July 24th, 1837.

His first appointment in the surveying service was made in August, 1821, when we find him first lieutenant of the *Barracouta* under Captain Cutfield, which vessel with the *Leven* formed Captain W. F. Owen's expedition for the survey of the African coasts in August, 1821. He subsequently, at the death of Captain Cutfield, succeeded Lieutenant Vidal as first lieutenant of the *Leven*.

In 1826, towards the close of the arduous commission of the *Leven*, Lieutenant Mudge was made a Commander, and almost immediately afterwards was selected to conduct the survey of the Irish coasts, at that time in a sadly neglected state.

Page 616 of the *Nautical Magazine* for 1837 has the following remarks :—

"In our usual obituary notice we have recorded the death of the above officer, whose valuable qualities had been long known in the scientific branch of his profession, whose name through his relative, the late General Mudge, was connected with the first scientific work of his country,* and whose amiable and generous mind had endeared him to those who knew him. The long continuance of a severe cold, arising from exposure on the Irish coast, produced those effects which a constitution, weakened by similar service on the coast of Africa, was unable to withstand, and was the original cause of his death. His remains were consigned to their last resting-place in the ground of the Cathedral at Howth, attended by the officers and men of the Ordnance, also those of his own department, and those of the coastguard, on the 24th July, with the usual military honours."

* Alluding to the Ordnance Survey of Great Britain commenced under General Mudge.

ADMIRAL SIR HENRY M. DENHAM, F.R.S.

Henry Mangles Denham, born 28th Aug., 1806, entered the Navy in April, 1809, as a volunteer, on board the *Daphne* 20, on the Guernsey and Jersey station, where he served from April, 1810, until May, 1814, latterly as Midshipman, in the *Vulture* 10, Captains Martin White, George Morris, and Henry Baugh. During the three following years we find him borne on the books of various ships, but detached the whole of the time on the survey of the Channel Islands, under Captain Martin White; with whom as Midshipman and Lieutenant, of the *Shamrock* 14, he was employed, from March, 1817, until May, 1827, in examining the English and Irish Channels, and the south-west and north-east coasts of Ireland. In Oct., 1827, he assumed command of the *Linnet* 10, for the purpose of surveying the coast of France; and while nominally attached, between Sept., 1828, and March, 1835, to the *St. Vincent*, *Caledonia*, and *San Josef*, he conducted a survey of the Bristol Channel, and of the ports of Liverpool and Milford. He was promoted to the rank of Commander on the 20th of the month last mentioned; was employed, from Jan., 1842, until July, 1845, in the *Lucifer*, in defining the coasts of Lancashire and Cumberland; was then appointed to the *Avon*; and on 27th September following, sailed on a surveying expedition to the coast of Guinea, including the mouths of the Niger. He returned to England on the attainment of post-Captain's rank, 17th Aug., 1846; was borne on the books of the *William and Mary* yacht from 2nd December following until the summer of 1847; and from 18th Feb., 1852, to 1859, commanded the *Herald* 8, for surveying service among the Fiji Islands. Captain Denham acted as Chief Assistant in the survey of the English and St. George's Channels, from the Straits of Dover to the edge of soundings; of the coast of Ireland from the Shannon to Belfast, including Berehaven, Crookhaven, Valentia, Baltimore, Glandore, Cove of Cork (entrance), Youghall, Waterford, Carlingford, Strangford, Ardglass, Belfast, Copeland Isles, and Larne; and of the English coast, including Falmouth (Sound), Helford, Manacles (reef), St. Helen's Pool, Scilly Islands, Skerries, Start Bay, Salcombe, Plymouth Sound, and Dartmouth. He concluded, also, the survey of the Bristol Channel throughout, including Hartland Quay, Clovelly, Barnstaple Bar, Appledore, Ilfracombe, Minehead, Watchet, Bridgewater, Kingroad off the Avon, Cardiff, Newport, Chepstow, Swansea, the Mumbles, Llanelley, Estuary of Bury, Carmarthen, Tenby, Milford Haven, Solvach, St. Bride's Bay, and Lundy Island; and of the coasts of Lancashire and Cumberland, with the Dee (to Chester), Liverpool Bay, and the Mersey; Morecombe Bay, including Fleetwood (Lancashire), and Piel a Foudra; and the Duddon and Ravenglass Estuaries, Whitehaven, Workington, Harrington, Maryport, and Douglas, Isle of Man.

In the Pacific during the commission of the *Herald*, surveys were made of Port Jackson, Lord Howe Island, Herald Bay, and Simonoff and Michaeloff Islands, Vatoa, Moala, Mbatiki, Matuku, Nairai, Ngau, Totoya, Ovalau, Wakaya, Makongai Islands of the Fiji group.

Trained in the *Herald* were Hutchinson, Napier, Wylds, Howard, and Hixson—all subsequently employed as active surveying officers.

The rank of Commander was conferred on him as a reward for the talent he had displayed in the execution of his surveying services generally, and in particular to mark the high sense entertained by the Lords of the Admiralty of the advantages accruing to the public from the completion of his survey of the port and harbour of Liverpool, and the neighbouring coast. The return of the port of Liverpool to the mere capacity of a half tide harbour Capt. Denham succeeded in averting, by dredging a new opening through the Burbo and Jordan Sands, which, on the accession of Her Majesty to the throne, was named the "Victoria Channel." In reference to a steam survey made by him in the North Sea, Sir Francis Beaufort declared it to be his conviction, "that no man could have achieved that great work with more skill;" and, in remarking upon the survey of Morecombe Bay, the same eminent authority recorded it as his opinion, "that a more complete and masterly work had rarely been sent to the Hydrographic Office."

In allusion to Captain Denham's services in the *Avon*, on the coast of Africa, whither he

was sent for the express purpose of surveying the Bight of Benin, Sir Francis Beaufort thus expressed himself. "In examining a survey made in such a deleterious climate, along such an impracticable coast, and in contact with such a treacherous population, I was prepared to make great allowances for work done under such striking disadvantages; but I find, with equal pleasure and surprise, that the whole has been performed with all the precision and fulness that could have been expected if made under the most favourable circumstances." For this service Capt. Denham was promoted to Post rank.

Subsequently to his return to England, he executed several commissions with reference to the steam marine for the Lords Committee of the Privy Council for Trade, under the conjoint authority of the Board of Admiralty, and also with reference to harbour improvements at Swansea and Bideford. Capt. Denham, who was some time Inspector of Steam Boat Accidents, was the inventor of "Denham Row Locks" for rowing boats; and of "Denham's (registered) Jury Tiller," for steering a ship on fire abaft, or when twisting her rudder ahead, breaking her tiller in a gale of wind, or receiving the enemy's shot.

In 1830, he received the thanks and a vote of plate from the Trinity Board; in 1834 he was further presented with the freedom of the borough of Liverpool, and elected a member of the Literary and Philosophical Society at that place; and in 1839 he was chosen a Fellow of the Royal Society; also, in 1841, a Younger Brother of the Trinity Corporation, and a member of the United States National Institution for the Advancement of Science. He also received the thanks of the Geological Society, of several Refuge Harbour Committees, and of the Committee at Lloyd's.

Sir Henry Denham, who was knighted on account of his long and meritorious services in the *Herald* on the Pacific station, may be considered as mainly instrumental in having brought about the various colonial surveys in Australia. At the close of the *Herald's* commission it became evident that some system was needed which would guarantee a continuation of the work which he had already commenced. The arrangement entered into between the Admiralty and Colonial Office allowed that while Royal Naval officers should be permitted with hired means to conduct the various colonial surveys in Australia, that the colonies should make to these officers a stipulated monetary allowance, as well as bearing half the working expenses of the several undertakings.

This system, which continued in force until the surveys of New South Wales, Victoria, and South Australia were completed, was found to answer admirably. It still holds good as regards Western Australia, but in the matter of Queensland, secondary circumstances emanating from abroad would appear to have acted against its being persevered in.

Sir Henry Denham's dates on the retired list are as follows:—Rear-Admiral, 5th March, 1864, Vice-Admiral, 14th July, 1871, Admiral, 1st August, 1877.

In 1883, Sir Henry Denham continued active and well, notwithstanding his many years of continuous and active labour.

ADMIRAL E. BARNETT.

1828-48.

Edward Barnett entered the Navy Feb., 1811, as volunteer on board the *Sybille*, Capts. Upton, Saunders and Forrest. In that frigate, in which he was employed for four years, part of the time in the capacity of Midshipman, he cruised off the coast of Ireland, off Newfoundland, and among the Western Islands, and visited the latitude of Greenland. After serving for a few months in the *Malta*, Capt. Fahie, on the Mediterranean station, where he assisted at the siege of Gaeta, he was received, in Nov., 1815, on board the *Superb*, Capt. Ekins, under whom he fought at the Battle of Algiers, Aug., 1816, and was afterwards until paid off in Oct., 1818, employed on home service.

Passing his examination Feb., 1819, he was nominated, in the following month, Master's Mate of the *Kangaroo*, surveying vessel, Master-Commander Anthony de Mayne, on the West

India station, where he remained until Dec., 1826, when, having been promoted to the rank of Lieutenant in June preceding, he was placed on half-pay. He was subsequently appointed—Feb., 1828, to the command of the *Linnet*, surveying vessel, employed among the Channel Islands, under Captain Martin White—in Feb., 1830, to the Hydrographic Office at the Admiralty—and to the command, Feb., 1833, Sept., 1835, and Nov., 1837, of the *Jackdaw*, *Lark*, and *Thunder*, surveying vessels, on the North America and West India station. He had the misfortune to lose the *Jackdaw* on a reef off Old Providence—(this vessel was tender to the *Blossom*—(not laid down in the charts, March, 1835. The *Thunder* he commanded for a period of ten years and nine months successively, as Lieutenant, Commander, and Captain. His promotion to the two latter ranks took place, June, 1838, and June, 1846.

Looking at Capt. Barnett's performances in the character of a Surveyor, it will be found that he assisted in the survey of the Channel Islands, of various parts of the West Indies, and of the Bahamas and Bermuda, and that he surveyed the coast of Central America from Chagre to San Juan de Nicaragua—the coast of Yucatan, from Cape Catoche to Campeché—and the Islands of Antigua Nevis, St. Kitts, Barbuda, St. Bartholomew, St. Martin, and Anguila. Of his career afloat, 22 years were passed in the West Indies, and nearly 17 in actual command of vessels. During the time he was in the *Thunder* he received a vote of thanks from the legislature of Bahama and from the merchants of St. Thomas for services rendered by him to those islands. He was placed on half-pay in Aug., 1848, and was not again employed.

Admiral Barnett who lived to the age of upwards of 79 years, died September 7th, 1879.

CAPTAIN RICHARD OWEN, R.N.

1829-32.

Richard Owen, nephew of the great surveying officer, Vice-Admiral W. F. Owen, whose services have already been alluded to at page 57, entered the Navy, May, 1811, and was employed during the war in the *Scipion* and *Lion*, flag-ships of Hon. Robert Stopford, at the Cape of Good Hope, and in the *Blenheim*, Capt. Warren, in the North Sea and Mediteranean. In July, 1817, after a servitude of three years on the coast of Africa and in the West Indies in the *Ulysses*, Capt. Browne, and *Primrose*, Capt. Phillott, he passed his examination; and on 16th Feb., 1821, while attached to the *Kangaroo* surveying vessel, under Mr. Anthony De Mayne, he was promoted to a Lieutenancy in the *Euryalus*, Capt. Bigland, on the Jamaica station. His next appointment was Nov., 1821, to the *Leven*, Capt. W. F. Owen, employed on a surveying expedition to the coast of Africa, where, during a continuance of nearly five years, he was for some time intrusted with the command of the *Cockburn* and *Albatross* schooners. In the *Albatross* it was his fortune, during the Ashantee war, to obtain the best thanks of Major-General Chas. Turner for his successful exertions in getting his vessel up the river, and for his forwardness both in the boats and on shore in an attack made, Feb., 1826, on the town of Maccaba. As a reward for his services he was promoted to the rank of Commander Sept., 1826. In 1828, he was employed by the Admiralty in surveying on the south coast of Wales, in connection with the Ordnance Survey; and in May, 1829, leaving Lieutenant Denham to complete the survey of the Bristol Channel, he commissioned the *Blossom* for the purpose of conducting a survey in the West Indies. He undertook the chain of islands outside Cuba, the cays and banks from Bajo de Nairdad to Crooked Island, south coast of Hayti, Bahama bank and channel, Bay of Honduras and coast to Porto Bello.

On the *Blossom* from her defective condition being paid off, Capt. Owen obtained command, March, 1833, of the *Thunder*. He continued employed as before in the West Indies until advanced to his present rank Jan. 1837, when, on obtaining his promotion, resigned to Lieut. Barnett.

Capt. Owen was afterwards employed as Auditor of the Poor-Law Commissioners.

COMMANDER M. A. SLATER, R.N.

Michael Atwell Slater entered the Navy in 1811, and from an early age is said to have shown a marked taste for hydrographical pursuits.

In 1816, we find him acting as an assistant to Capt. W. H. Smyth in that officer's extensive surveying operations in the Mediterranean. At the conclusion of that work he was at once appointed to conduct surveys of the eastern coast of England and Scotland, commencing in 1829 accurate surveys of the coasts of Durham, Northumberland, and part of Scotland from Hartlepool to Fort William. His work was remarkable for accuracy and care, more particularly the drawings, which were perfect pictures of faithful detail and neatness of execution.

In the furthering of his surveying operations he spent no small amount of his private means, the resources allowed by the State in those days being not altogether adequate. He was cut off in his prime. On the 2nd February, 1842, he fell over the cliff called Holburn Head, near the eastern extremity of Scotland, an accident, which it is hardly necessary to add, terminated his life. Lieutenant Otter, R.N., succeeded him in charge of this part of the survey of the United Kingdom.

CAPTAIN R. MORESBY, I.N.

Robert Moresby, formerly of the East India Company's Service, and subsequently of the Bombay Marine and Indian Navy, was a brother of the late Sir Fairfax Moresby, who died an Admiral of the Fleet in 1876, and uncle of the present Rear-Admiral John Moresby.

The first record of a survey by him is that of the straits of Durian, made with Lieut. W. S. Collinson in 1822, and that of Tavoy executed in 1824, and published by Horsburgh in 1827. A copy of this survey was recently discovered by Commander Taylor, the late Superintendent of Marine Surveys at Calcutta, who had a chart constructed and published from it.

About the year 1830, when the Indian government resolved upon a survey of the Red Sea at the instigation of Sir John Malcolm, Captain Moresby was selected for the command of the *Palinurus* and appointed to survey the northern half of that sea from Suez to Jiddah, while Captain Elwon in the *Benares* took up the southern half, or from Jiddah to Bab-el-Maudel.*

No expense was spared in fitting out the expedition, and amongst the officers were James Young, Pinching, Powell, Barker (the Abyssinian traveller), Christopher (the pioneer of the Indus), who fell at Multan, Wellsted (the accomplished author), and Felix Jones, whose skill as a draughtsman was already appreciated. The first base was measured by chain at Suez by Captain Moresby in 1830, and the survey was steadily continued, without other interruptions than were necessary to refit the ships and crews, to its completion in 1834, by a system of triangulation down either shore. The work was verified by frequent bases, by azimuths, by latitudes of the sun and stars observed on shore with artificial horizons, and by chronometric differences.

The original charts were drawn on a scale of an inch to the mile, but in places where the complicated nature of the channels required greater nicety, scales as high as ten inches were employed. The original drawings were by Felix Jones.

The resolution of all the officers was that the Red Sea survey should be as perfect as labour and skill could make it; and it has served well to guide thousands of steamers up and down one of the most important, and, at the same time, one of the most intricate routes in the world.

The northern part of the Red Sea, by Captain Moresby, was published in two sheets in 1833, the southern part by Captain Elwon, also in two sheets, in 1834.

Two sheets of harbours in the Red Sea, and the sailing directions by Captains Moresby and Elwon, were published in 1841.

* *See* Memoir on the Indian Survey, p. 14, 15.

Captain Horsburgh had strongly recommended that the coral islands, which cross the track of Indian trade, should be surveyed. As soon, therefore, as Captain Moresby had completed his Red Sea work, he was ordered to proceed in the surveying ship, *Benares*, with the *Royal Tiger*, commanded by his assistant, Lieutenant Powell, I.N., and a large decked boat called the *Maldiva*, to survey the Maldive Islands. The charts were again drawn by Felix Jones, and so beautiful was their execution considered that they were sent home for the Queen's inspection.

The Maldive Islands were at this time almost unknown, and in order to acquire a knowledge of the language, customs and resources of the inhabitants, Lieutenants Young and Christopher were landed in June, 1834, and resided for some time at Malé, the principal island.

In the Bombay *Geographical Society's Journal* is an interesting memoir on the inhabitants of the Maldive Islands by those two officers, by which it appears that the Maldivians were found to be a civilized, commercial, and seafaring people, who constructed their own quadrants, and translated our nautical tables into their language.* On the completion of the Maldive Island survey, Captain Moresby proceeded to the Chagos Archipelago in February, 1837, and afterwards surveyed part of the Saya da Malha bank, about 300 miles south eastward of the Seyehelles. He completed this important work, and returned to Bombay in September, 1838.

One section of Mr. Darwin's work on the structure and distribution of coral reefs is devoted to the Maldive archipelago and the great Chagos bank, and mainly consists of information communicated to him by Captain Moresby.

The principal charts resulting from Captain Moresby's surveys were:—

Two sheets of the northern part of the Red Sea.
Three sheets of the Maldive Islands.
Chagos Islands, principal groups in the Chagos Archipelago.
Tavoy River, Straits of Durian, Tanjong Bon and Pulo Barellah (2 sheets), 1823.
Nautical Directions for the Red Sea and gulf of Suez, 1841.
Nautical Directions for the Maldive Islands and Chagos Archipelago, 1839.

M. M. PEYTIER (French).

1829-37.

The operations executed in Eastern Greece by M. Peytier are a continuation of those in the Morea, an account of which was published in the *Bulletin de Geog*, vol. xix. p. 89. These observations were made with the same instruments (Gambey's theodolites) and with the same care. No new base was measured, nor any further astronomical observations made. Several sides of the triangulation of the Morea were made use of as the basis for the calculations of the new triangles, and to determine the geographical positions; the extremities of these bases have been taken.

The heights above the level of the sea were calculated from a massive ruin at the entrance of the Piræus, which was connected with the triangulation, and of which the precise height above the level of the sea had been measured.

Starting from this point, the elevation of two mountains in the Isthmus of Corinth were calculated, the heights of which had been already obtained from the direction of the gulf of Napoli; and the agreement of the two results confirms what had already been said in the paper before alluded to, that the gulfs of Napoli, Athens, Corinth, Marathonisi, and the sea near the Ionian Islands, were on the same level.

M. Peytier's operations in 1837 extend over the Negropont, Attica, Bœotia, and Phocis, as far as the high mountains on the west of Salona, and the frontier near Zeitún. They covered a surface of more than 700 square leagues, and the number of positions fixed amounted to nearly 600.

* *See* an interesting account of the nautical instruments used by the Maldive Navigators by James Prinsep, in the Journal of the Asiatic Society of Bengal, v. p. 784.

CAPTAIN SIR JAMES C. ROSS, KNT., F.R.S., &c.

1829.

Born in 1800, this officer entered the Navy 5th April, 1812, as first-class volunteer on board the *Briseis* 10, Captain John Ross (his uncle), under whom he became a midshipman and master's mate in the same vessel and in the *Actæn* and *Driver* in the Baltic, White Sea, Channel, and west coast of Scotland until December, 1817.

On January 16th, 1818, he was appointed as Admiralty midshipman on board the *Isabella*, hired sloop, and in the course of the same year accompanied Captain John Ross in that vessel on his first expedition for the discovery of a north-west passage.

In Dec. 1818, having returned to England, he joined the *Severn*, Capt. Wm. M'Culloch. Between Jan. 1819 and Oct. 1825 he was engaged, under the present Sir Wm. Edw. Parry (*to whose memoir refer*), in three other voyages to the Arctic regions. During the first two he was attached to the *Hecla* and *Fury* bombs, commanded in person by Capt. Parry; and while absent on the second he was promoted, 26th Dec. 1822, to the rank of lieutenant. On the last occasion he was again in the *Fury*, with Capt. Henry Parkyns Hoffner, and was in that vessel wrecked in lat. 72° 42′ 30″, long. 91° 50′ 5″. In 1827 Mr. Ross, as first lieutenant of the *Hecla*, was the companion once more of Capt. Parry in his attempt to reach the Pole from the northern shores of Spitzbergen, by travelling with sledge-boats over the ice. On his return to England he was presented with a commander's commission, dated 8th Nov. 1827. He was next, from 1829 until 1833, employed under his uncle in the Polar expedition equipped by Sir Felix Booth. His eminent services during that period (he had the honour of planting the British flag on the North Magnetic Pole) were rewarded (after he had officiated for a year as supernumerary-commander of the *Victory* 104, flag-ship of Sir Thos. Williams at Portsmouth) by his elevation to post-rank, 28th Oct., 1834.

In Dec., 1835, Capt. Ross was appointed to the command (which he retained about 12 months) of the *Cove*, a sixth-rate, for the purpose of proceeding in quest of, and of conveying relief to, some missing whalers who had been frozen up in Baffin Bay.

He was subsequently, until 1838, employed in making a magnetic survey of Great Britain and Ireland, by order of the Admiralty; and on 8th April, 1839, he was appointed to the command, in the *Erebus* bomb, of an expedition (consisting of that vessel and of the *Terror*) which, in the ensuing September, sailed from England for the purposes of magnetic research and geographical discovery in the Antarctic Seas. During an absence of four years three persevering attempts were made to penetrate the icy limits of the South Pole. In the course of their cruizes the ships discovered a vast continent, fringed with a barrier of ice 150 feet in height; they nevertheless adventurously persisted, and in spite of many perils, succeeded in arriving within 157 miles of the South Pole (lat. 78°), or some hundreds of miles nearer than any previous navigator. Among other discoveries they met with an active volcano in lat. 77° 32′ south, and long. 167° east—seated amidst eternal snows, and gaining an altitude of 12,400 feet. To this was imparted the name of "Mount Erebus," as had been to the continent that of "Victoria Land."

The result of this voyage placed the magnetic phenomena of the southern hemisphere in a clear light before the world. Valuable contributions were also made to botany, zoology, and geology; and meteorology and terrestrial magnetism derived much benefit from the assiduity bestowed on them. The expedition returned in Sept., 1839; and as a proof of the skill, humanity, and attention with which it had been conducted, we must add that in the whole of the four years it had only lost three men by accident and one by illness.*

A short time after his arrival in England, Capt. Ross received the honour of knighthood, and on 31st Jan., 1848, he was appointed to the *Enterprise* discovery-ship, now in search of the expedition under Sir John Franklin.

* *See* "A Voyage of Discovery in the Southern and Antarctic Seas," published by Sir J. C. Ross, in 2 vols. 8*vo.* 1847.

Sir Jas. Clark Ross was elected a Fellow of the Linnæan Society in 1823, and a Fellow of the Royal Society, 11th Dec., 1828. He was also a Fellow of the Royal Astronomical and Royal Geographical Societies of London, a Member of the Royal Society of Antiquaries of Copenhagen, and a Corresponding Member of the Geographical Society of Paris. In 1833, he received the thanks of the common council of London, and a piece of plate from the Subscribers to the Land Arctic Expedition; in 1841 the "Founder's Gold Medal" from the Geographical Society of London; in 1842 the Gold Medal of the Geographical Society of Paris; and in 1844 the honorary degree of D.C.L. from the University of Oxford. Sir James Ross published a work on the effect of the pressure of the Atmosphere on the Mean Level of the Ocean, *4to.* 1854.

Sir James Ross had more experience of Arctic service than any other officer that ever lived. He endured nine Arctic winters, and passed sixteen navigable seasons in the Arctic regions. He was, without comparison, the fittest man to command the expedition which first crossed the Antarctic circle on January 1st, 1841.

Sir Joseph Hooker, the eminent botanist, served in that capacity, and as assistant-surgeon in the *Erebus*. Besides contributing to the narrative of the voyage, he collected materials for the six quarto volumes subsequently published on the Flora Antarctica, Novæ Zelandiæ, and Tasmanica, which are said to have established his reputation.

On receiving the Founder's Medal of the Royal Geographical Society in May, 1883, Sir Joseph Hooker alluded to his former commander, Sir James Ross, as "the greatest navigator since the days of Cook."

JOHN BISCOE, Esq., F.N.

1830.

The name of John Biscoe stands prominently forward as one of the recipients of the Royal Premium or Medal of the Royal Geographical Society. In 1833, this honour was awarded him for the discovery of Enderby Land and Graham Land in the Antarctic Ocean, the result of an enterprising spirit which led him while prosecuting whaling operations to extend his voyages far to the southward in search of land.

In the account of this voyage, published in the *Nautical Magazine* for 1835, it will be found that the brig, *Tula*, of 148 tons, belonging to Messrs. Enderby, and commanded by Mr. John Biscoe, R.N., with the cutter, *Lively* as tender, under Mr. Aveling, left London July 14th, 1830, on a sealing voyage to the south seas, but with instructions to make discoveries in a high southern latitude.

After touching at the Cape Verd Islands for salt, Port Louis, Berkley Sound, of the Falkland Islands, was anchored in November 10th. On the 27th of the same month the vessels proceeded to sea, searching in vain for the Aurora Islands in latitude 52° 15′ S., longitude 47° 57′ W., said to have been discovered by the ship *Aurora*, in 1762, and to have been again seen by the *Principessa* in 1790, but not found by either Weddell or Biscoe in the above assigned position.*

Having experienced a continuous series of gales, the vessels parted company in lat. 58° 20′ S., long. 25° 11′ W. on the 19th of December. Sandwich Land was sighted, and the position of its southern end in lat. 58° 25′ S., long. 26° 55′ W. determined. Attempts to penetrate further south at this season proved unsuccessful.

February 28th High Land was seen at a great distance off to the southward, and on the 2nd March, 1831, the position of Cape Ann was inferred by bearing to be in lat. 66° 25′ S., long. 49° 18′ E.

* In 1794, the Spanish vessel of war *Atrevida* was sent to ascertain the position of the Aurora Islands. Nine days were spent in the vicinity. The position quoted was given to the southern island; a second island was stated to be in latitude 53° 3′ S., longitude 47° 53′ W., and a third in latitude 52° 37′ S., longitude 47° 43′ W.

The *Lively*, which had parted company in a gale, was at this time given up for lost by the officers of the *Tula*.

Van Diemen's Land was made on the 7th May, and the *Tula* moored in Sullivan's Cove, of the Derwent River, with the aid of the Antarctic voyager, Captain Weddell, who was here found in his vessel, the *Eliza*.

The *Tula*, after repairs, &c., sailed from the Derwent River 3rd September, 1831, and when in the entrance unexpectedly fell in with her long-lost consort, the *Lively*. Mr. Avery, her commander, had a melancholy tale to tell of the sufferings passed through since last they had met—this necessitated the return of the *Tula* to the Derwent River.

October 10th, 1832, the vessels sailed again, shaping course towards New Zealand, and calling at the Bay of Islands, Chatham Island, Cornwallis Islands, and Bounty Rocks, in quest of skins and oil.

February 1st, 1833, Adelaide Island was discovered, and on the 19th Pitt Island, situated in lat. 65° 20′ S., long. 66° 38′ W. On the 21st William IV. land was named after the ruling monarch, the two highest mountains being named Mount William and Mount Maberly.

On the 5th March the vessels had reached New South Shetland, and put into a harbour called New Plymouth, where they found the schooner *Exquisite*, of London. Having made a short coasting trip in the *Lively* in search of seals, Biscoe returned to find the *Tula* in a damaged condition, owing to a heavy swell having bumped her stern on the rocks, necessitating a visit to Berkley Sound, of the Falkland Islands.

The *Lively* was wrecked on Mackay Island in July, her crew returning to Berkley Sound, afterwards joining the *Tula*.

Biscoe then continued to Santa Cruz, of St. Catherine Island, and had intended spending another season round Cape Horn previous to returning to England. "But my crew," says Biscoe, in his journal, "were quite out of heart with the voyage, and are leaving me one by one, as opportunity offers," in which, he continues, "I can hardly blame them." The whole crew having deserted him by the 29th September with the exception of four men and three boys, he resolved on returning to England.

The *Tula* reached the Downs on the 1st February, 18[illegible], and thus terminated a voyage, which assigns to Captain Biscoe no humble station among [illegible] persevering and enterprising of our countrymen, who have added to our nautical and [illegible] graphical knowledge of the southern hemisphere.

The land discovered by him on the parallel of 67° S., and in longitude 50° W. was named Enderby Land, in honour of the merchants who fitted out the expedition.

Captain John Biscoe died in the year 1848.

GENERAL SIR EDWARD SABINE, R.A., K.C.B.

1818-1830.

In his younger days as astronomer to two successive Arctic Expeditions, Sir Edward Sabine contributed to a great extent by his observations to the hydrography of the Polar Regions. His pendulum experiments in the *Griper* and *Pheasant* also bear, indirectly and advancedly, perhaps—nevertheless, they bear, on hydrography.

He was born in Dublin October 14th, 1788, and was the youngest of a large family, whom he has long survived. He was educated at the Royal Marine Colleges of Marlow and Woolwich, and obtained his first commission December 22nd, 1803. He served in the American War, 1813-1816, was present in the campaign of 1814 on the Niagara frontier, and was favourably mentioned in despatches.

On the conclusion of the war he was appointed, on the recommendation of the President and Council of the Royal Society, astronomer of the first expedition in search of the

North-West Passage—viz., the expedition commanded by Sir John Ross in 1818—and on the return of that expedition accompanied the second expedition of 1819-1820, commanded by Sir Edward Parry, in the same capacity.

In 1821-1822 he was employed by the Government in conducting a series of pendulum experiments for determining the figure of the earth at several stations at or near the Equator on the coasts of Africa and America in H.M.S. *Pheasant;* and in the following year (1823) he proceeded in H.M.S. *Griper* to extend the series to Greenland, Spitzbergen, and Norway.

In 1824, he was engaged in publishing the results of these experiments. In 1825, he was appointed with Sir John Herschel the British members of a Joint Commission between the French and English Governments to determine the precise difference of longitude between the observatories of Paris and Greenwich by means of rocket signals.

In 1827, he was employed in determining by direct observation the difference in the length of the seconds pendulum at Paris and Greenwich, and of the magnetic force of the earth at the same stations, and in the same year he accepted the office of Secretary of the Royal Society. In 1828 and 1829 he was engaged in various scientific investigations, of which the accounts are published in the "Philosophical Transactions."

In 1830, in consequence of the disturbed state of Ireland, where his company of Artillery was then serving, he was required to join it, and served partly with his regiment and partly on the general staff of the army in Ireland from 1833-1837, when he returned to England on leave, and resumed his scientific pursuits; and in 1836 and 1837 presented to the British Association an account of a magnetic survey of the British Islands, and a report on the variations of the magnetic force in different parts of the globe.

In 1839, he was appointed to superintend the proceedings at the magnetic observatories established in the Colonies, and to reduce and publish the results obtained at them, as well as those of a general magnetic survey of the globe, commenced at that period, under the direction of the Admiralty. In the same year he was elected General Secretary of the British Association, in 1846 Foreign Secretary of the Royal Society, and in 1850 Vice-President and Treasurer of that Society. In 1861 he became President of the Royal Society, which office he retained until 1871.

Sabine was elected to the Royal Society so long ago as 1818, was Vice-President in 1850, and succeeded the late Sir Benjamin Brodie in the presidency in 1861. He held the latter post for many years, and so late as 1870 we find him presiding at one of the most brilliant of the Royal Society's *conversazioni*. He was for many years an active member of the British Association, at whose meetings some of his most important papers were read, was its general secretary 21 years, and the presidential chair of which he filled in 1853. He was a member of the Royal Commission to inquire into the standards of weights and measures (1868), and was made a K.C.B. in 1869. He had the Prussian order *pour le mérite*, the Italian of Ss. Maurice and Lazaro, and the Brazilian of the Rose. In 1821 he received the Copley Medal of the Royal Society; in 1826 the Lalande Medal of the Institute of France; and in 1849 the Royal Medal of the Royal Society. He was elected honorary or corresponding member of many of the principal academies and societies of Europe and America. As a scientific worker, Sir Edward Sabine holds a high rank, and his name will ever hold a large place in the annals of science and the history of navigation. He died June 26th, 1883, at the advanced age of 95 years.

The following were published by his authority:—

Account of Experiments to determine the figure of the Earth by means of the Pendulum vibrating seconds in different latitudes. *4to.* 1825.

Discussion of Magnetical observations made during the voyages of H.M. ships, *Adventure* and *Beagle*, 1826-36. *8vo.* 1838.

Report of the Variations of the Magnetic Intensity observed at different points of the Earth's surface. *8vo.* 1838.

Report on the Magnetic Isoclinal and Isodynamic Lines in the British Islands. *8vo.* 1839.

Lines of total Magnetic Intensity. *4to.* 1839.

Contributions to Terrestrial Magnetism. *4to.* 1840-49.

Wrangell, Ferdinand von. Narrative of an Expedition to the Polar Sea in the years 1820-3. *8vo.* 1840.

Observations on Days of unusual Magnetic Disturbance, made at British Colonial Magnetic Observatories under the Departments of the Ordnance and Admiralty, 1840-44. 2 vols. *4to.* 1843-51.

Hydrographical Notices (Currents). *8vo.* 1845.

On some Points in the Meteorology of Bombay. *8vo.* 1846.

On the Diurnal Variation of the Magnetic Declination at St. Helena. *4to.* 1847.

On the Lunar Atmospheric Tide at St. Helena. *4to.* 1847.

Manual of Terrestrial Magnetism. (Instructions for Magnetic Surveys by Land and Sea). *12mo.* 1850.

Humboldt, Alex. von. Cosmos: Sketch of a Physical Description of the Universe; translated under the superintendence of Col. Ed. Sabine. 4 vols. *12mo.* 1850-58.

On the Annual Variation of the Magnetic Declination at different Periods of the Day. *4to.* 1851.

On Periodical Laws discoverable in the Mean Effects of the larger Magnetic Disturbances. *4to.* 1851.

On the Periodic and Non-Periodic Variations of the Temperature at Toronto in Canada, from 1841 to 1852 inclusive. *4to.* 1853.

On the Periodic and Non-Periodic variations of the Temperature at Toronto from 1841 to 1852 inclusive. *4to.* 1853.

On the Magnetic Variation in the vicinity of the Cape of Good Hope. *8vo.* 1855.

On the Lunar-Diurnal Magnetic Variation at Toronto. *4to.* 1856.

Directions for the use of a small Apparatus to be employed with a Ship's Standard Compass for ascertaining the changing part of the Deviation in the pointing of the Compass. *8vo.* 1857.

Circular to the Visitors of the Royal Observatory. *8vo.* 1862.

Report on the Repetition of the Magnetic Survey of England. *8vo.* 1862.

On the Cosmical Features of Terrestrial Magnetism. *8vo.* 1862.

Results of the Magnetic Observations at the Kew Observatory from 1857 to 1862 inclusive. *4to.* 1863.

A Comparison of the most notable Disturbances of the Magnetic Declination in 1858 and 1859 at Kew and at Nertschinsk; preceded by a brief Retrospective View of the Progress of the Investigation into the Laws and Causes of the Magnetic Disturbances. *4to.* 1864.

Address delivered at the Anniversary Meeting of the Royal Society. *8vo.* 1865-70.

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